Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11)

A longitudinal study funded by the DCSF (2003 – 2008)

Relationships between pupils' self-perceptions, views of primary school and their development in Year 5

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Executive Summary

The Effective Pre-school and Primary Education Project 3-11 (EPPE 3-11) is a large-scale longitudinal study of the impact of pre-school and primary school on children's developmental outcomes, both cognitive and social/behavioural. The study has been following children from the start of pre-school (at age 3 years plus) through to the end of primary school. Previous reports have focused on the educational and social/behavioural outcomes of the EPPE 3-11 sample at the end of Year 5 (age 10) and progress from the end of Year 1 (age 6) to the end of Year 5 (age 10) in primary school (Sammons et al., 2007a; 2007b). The research also explored the predictive power of a wide variety of child, parent, and family characteristics on attainment and development, including the Early years home learning environment (HLE) during the years of pre-school and aspects of the later HLE during Key stage 1 of primary school (Sammons et al., 2002; 2003; Sylva et al., 2004).

This research builds on earlier reports (Sammons et al., 2007a; 2007b) by investigating relationships between children's outcomes in Year 5 and aspects of pupils' self-perceptions and their views of primary school, measured in Year 5 (age 10) and in Year 2 (age 7) of primary school, controlling for background characteristics. These measures have been derived from a self-report instrument completed by EPPE 3-11 children. The analyses explored associations between children's progress and development over time and their self-perceptions and views of primary school.

Key Findings:

Pupils' Self-perceptions at Year 5

- Overall, pupils' self-perceptions (particularly 'Academic self-image' and 'Behavioural self-image') were stronger predictors of their social/behavioural and educational outcomes at age 10 than pupils' views of their primary school. The findings were similar for both attainment and progress up to Year 5.

- All self-perception factors were related on an individual basis to children's outcomes, suggesting that having higher 'Academic self-image' and/or 'Behavioural self-image' is associated with higher cognitive attainment and better social/behavioural outcomes, as well as positive progress on these outcomes from Year 1 to Year 5.

- The factor 'Enjoyment of school' was positively related to better social/behavioural outcomes, suggesting that children who enjoyed going to school and were interested in lessons had higher levels of 'Pro-social' behaviour and 'Self-regulation', but also lower levels of 'Hyperactivity' and 'Anti-social' behaviour. However, there was a different relationship between 'Enjoyment of school' and cognitive outcomes; medium levels of 'Enjoyment of school' were linked with higher Reading and Mathematics scores than either high or low levels of 'Enjoyment of school'.

- Children's 'Academic self-image' was the strongest predictor of cognitive outcomes and 'Self-regulation', whereas children's 'Behavioural self-image' was the strongest predictor of the other social/behavioural outcomes. These findings suggest that there might be a strong *reciprocal* relationship between 'Academic self-image' and academic achievement and between 'Behavioural self-image' and social/behavioural outcomes.

Pupils' Views of Primary school at Year 5

- The three factors of pupils' views of primary school ('Teachers' support for pupils' learning', 'Headteacher qualities' and 'Positive Social Environment') showed a statistically significant relationship with outcomes. However, only perceived 'Positive Social Environment' was related to all children's outcomes. This suggests that when a child feels safe and peers are viewed as friendly, both educational and social/behavioural outcomes benefit.

- Children's perceptions of 'Teachers' support for pupils' learning' were positively related to 'Self-regulation' and 'Pro-social' behaviour. Attending a school where the child perceives they get support for learning from their teachers predicts better child outcomes in terms of 'Self-regulation' and 'Pro-social' behaviour.

- Perceptions of 'Headteacher qualities' were related to 'Pro-social' behaviour and 'Hyperactivity', and to Reading attainment in Year 5. The findings suggest that when a child perceives that the Headteacher is interested in children and is making sure that children behave, children have better 'Pro-social' behaviour, lower levels of 'Hyperactivity', and better Reading scores in Year 5 (age 10).

Pupil's self-perceptions at Year 2

- Pupils' who had a higher 'Behavioural self-image' in Year 2 (age 7), had all round better social/behavioural development and higher cognitive attainment and progress by Year 5 (age 10). In addition, the associations of 'Behavioural self-image' with social/behavioural outcomes are higher than with cognitive outcomes, which we expected since perceptions of pupils' own social behaviour are more likely to predict later social/behavioural outcomes than later cognitive outcomes.

- The factors 'Enjoyment of school' and 'Academic self-image' did not show strong relationships with children's outcomes after controlling for other influences. Nevertheless, they were significant when used separately from other self-perception factors. In general, higher levels of 'Academic self-image' were related to higher Mathematics scores, better 'Self-regulation' and 'Pro-social' behaviour, and lower 'Hyperactivity'. Medium and high levels of 'Enjoyment of school' were related to higher Mathematics scores, and better 'Self-regulation' and 'Pro-social' behaviour, whereas medium levels of 'Enjoyment of school' were related to higher Reading scores and lower 'Hyperactivity'.

Aims

The aims of these analyses are:

- To explore the relationship of pupils' self-perceptions and their cognitive and social/behavioural outcomes at age 10, controlling for background characteristics and prior attainment or developmental level
- To explore the relationship of pupils' views of primary school and their cognitive and social/behavioural outcomes at age 10, controlling for background characteristics and prior developmental level
- To investigate the relative importance of pupils' self-perceptions and views of primary school in relation to children's outcomes, when all pupils' factors are entered together in the model
- To examine the impact of earlier self-perceptions (measured at age 7) on later cognitive and social/behavioural outcomes at age 10.

Methods

Analyses in this report focus on children for whom data on academic attainment and social/behavioural outcomes were collected in Year 5 of primary school (N=2,600). The findings on children's attainment, progress and social/behavioural development at Year 5 (age 10) are published in separate reports with a focus on the influences of child, family, and home learning environment (HLE) characteristics, as well as pre- and primary school experiences (see Sammons et al., 2007a; 2007b). In this report we investigate the effects of children's views of themselves in school and their views of their primary school using self-reports collected in Year 5 (age 10) and Year 2 (age 7).

The wide range of information used in these analyses included standardised cognitive assessments, teachers' assessments of social/behavioural development, information about child, family and home learning environment (HLE) characteristics collected from parental interviews when children were recruited to the study (age 3 years +) and again in Key Stage 1 (KS1), measures of pre-school quality and effectiveness and independent measures of primary school academic effectiveness (see Melhuish et al., 2006). In line with earlier analyses, the research uses multilevel models to explore the power of different predictors for children's outcomes at age 10. A more detailed description of measures used in the original contextualised models, along with the models themselves, can be found in Appendix 2.

Measures of children's self-perceptions were collected in both Year 2 (age 7) and Year 5 (age 10) of primary school, whereas pupils' self-reported measures of their views of primary school were collected in Year 5 (age 10) only. In this report, several aspects of pupils' self-perceptions are used as predictor measures: 'Enjoyment of school', 'Academic self-image', and 'Behavioural self-image'. In addition, aspects of pupils' views of primary school are also used as additional predictors: 'Teachers' support for pupils' learning', 'Headteacher qualities', and 'Positive Social Environment'.[1]

Relationships between Year 5 pupils' self-perceptions and their outcomes

Overall, pupils' self-perceptions (particularly 'Academic self-image' and 'Behavioural self-image') were stronger predictors of their social/behavioural and educational outcomes at age 10 than pupils' views of their primary school. The findings were similar for both attainment and progress up to Year 5.

As hypothesised, the findings demonstrate a stronger association between pupils' views of themselves and their educational outcomes, than an association between pupils' views of their primary school and their outcomes. All self-perception factors were related to pupils' outcomes, suggesting that having higher 'Academic self-image' and/or 'Behavioural self-image' is associated with higher cognitive attainment and better social/behavioural outcomes, as well as positive progress on these outcomes from Year 1 to Year 5. In addition, the factor 'Enjoyment of school' was positively related to social/behavioural outcomes, suggesting that children who enjoyed going to school and were interested in classes had higher levels of 'Pro-social' behaviour and 'Self-regulation', but also lower levels of 'Hyperactivity' and 'Anti-social' behaviour.

However, there was a different relationship between 'Enjoyment of school' and cognitive outcomes; medium levels of 'Enjoyment of school' were linked with higher Reading and

[1] Principal components analysis was used to identify a number of underlying factors (aspects) from the self-report surveys. The description of items that form each of these factors identified from the Year 5 and Year 2 self-reported children's questionnaires are shown in Appendix 1.

Mathematics scores than either high or low levels of 'Enjoyment of school'. This finding suggests that children who enjoyed going to and being in school the most did not necessarily have the highest cognitive scores. The interaction between 'Academic self-image' and 'Enjoyment of school' showed that low levels of 'Academic self-image' were related to the lowest Reading and Mathematics attainment scores in Year 5 regardless of the level of 'Enjoyment of school'. However, for higher levels of 'Academic self-image', the 'Enjoyment of school' did matter: medium levels of 'Enjoyment of school' were related to the highest Reading and Mathematics attainment scores in Year 5. The finding suggests that children who have higher levels of 'Academic self-image' and either do not enjoy school or enjoy school very much, have similar cognitive attainment scores; however their cognitive attainment is lower compared with children who have medium levels of 'Enjoyment of school' and similar levels of 'Academic self-image'.

In addition, children's 'Academic self-image' was the strongest predictor of cognitive outcomes and 'Self-regulation', whereas children's 'Behavioural self-image' was the strongest predictor of the other social/behavioural outcomes. These findings are in line with other research on children's self-concept (Marsh, 2006) and suggest that a child's views of his or her own academic abilities are more likely to be related to his or her performance on Reading and Mathematics tests, as well as teacher's ratings of the child's social behaviour in terms of 'Self-regulation'. Similarly, a child's own views of his or her behaviour are likely to be related to teacher's ratings of 'Pro-social' behaviour, 'Hyperactivity' and 'Anti-social' behaviour (similar findings in Haynes, 1990). However, it is important to note that it is not possible to conclude that there is a causal effect of children's self-perceptions on their cognitive and social/behavioural outcomes in Year 5. The findings only show that the relationship between 'Academic self-image' and cognitive outcomes is strong, which was expected since previous studies has consistently shown a strong *reciprocal* relationship between academic self-concept and academic achievement (Marsh, 1994; 2006; Marsh and Yeung, 1997). Similarly, there might be a reciprocal relationship between 'Behavioural self-image' and social/behavioural outcomes (Sammons et al., 2008a).

Relationships between Year 5 pupils' views of primary school and their outcomes

Even though pupils' views of their primary school were somewhat weaker predictors of their social/behavioural and cognitive outcomes than pupils' self-perception factors, they still showed a statistically significant relationship with the outcome measures. Of three factors tested, only perceived 'Positive Social Environment' was related to all of the outcomes. This suggests that when a child feels safe and peers are viewed as friendly, both educational and social/behavioural outcomes benefit. Children's perceptions of 'Teachers' support for pupils' learning' were positively related to 'Self-regulation' and 'Pro-social' behaviour. Attending a school where the child perceives they get support for learning from their teachers predicts better 'Self-regulation' and 'Pro-social' behaviour outcomes. In addition, 'Headteacher qualities' were related to 'Pro-social' behaviour and 'Hyperactivity', and to Reading attainment in Year 5. The findings suggest that when a child perceives that the Headteacher is interested in children and is making sure that children behave, children have better 'Pro-social' behaviour, lower levels of 'Hyperactivity', and better Reading scores in Year 5 (age 10). Overall, the results of pupils' views of their primary school broadly support the notion that in safe and supportive schools there were measurable benefits in terms of children's all round development.

The predictive impact of Year 2 pupils' self-perceptions

Findings from multilevel analyses showed that children who had higher 'Behavioural self-image' in Year 2 (age 7) had all round better social/behavioural development and higher cognitive attainment and progress by Year 5 (age 10). In addition, the associations of 'Behavioural self-image' with social/behavioural outcomes are higher than for cognitive outcomes, which we expected since perceptions of pupils' own social behaviour are more likely to predict later social/behavioural outcomes than later cognitive outcomes. In general, higher levels of 'Academic self-image' were related to higher Mathematics scores, better 'Self-regulation' and 'Pro-social' behaviour, and lower 'Hyperactivity'. Medium and high levels of 'Enjoyment of school' were related to higher Mathematics scores, and better 'Self-regulation' and 'Pro-social' behaviour, whereas medium levels of 'Enjoyment of school' were related to higher Reading scores and lower 'Hyperactivity'. The findings were broadly similar to the results for Year 5 pupils' perceptions even though there are some apparent differences, particularly in the effect of 'Academic self-image'.[2]

Overall, current findings provide confirmation that there are significant variations in the perceived quality of primary school and processes in Year 5 (age 10), and that such variations are important predictors of progress in children's cognitive and social/behavioural outcomes. The results indicate that more supportive schools tend to foster both better cognitive and better social/behavioural outcomes. In addition, consistent with the literature, children's views of their own behaviour and self-image are related to overall outcomes and tend to be stronger predictors of children's outcomes than their perceptions of their primary school. Overall, the findings indicate that features of teacher's practice and the school social environment play a part in shaping children's progress, in addition to their own personal, family and home learning environment (HLE) characteristics.

Implications

The EPPE 3-11 research has shown that there are significant variations in children's self-perceptions in terms of academic and behavioural self-concepts. These are strongly linked with measures of their academic and social/behavioural outcomes. It is likely that pupils' views of themselves and their attainments have a reciprocal relationship. Those who attain better will be likely to develop a more favourable academic self-concept and vice versa. A similar pattern is evident for the connection between children's self-perception of their behaviour and measures of their behaviour in school rated by teachers. It is likely that feedback processes mediate these relationships. Helping children to evaluate their own learning and their behaviour and providing regular formative feedback on attainment and behaviour and ways to improve these outcomes is likely to promote progress and higher future attainment. Similarly, improving children's attainment will also help improve their academic self-concept and behaviour.

In addition, the results reveal that there are important differences in children's experiences of school that help to account for differences in educational outcomes. Those who perceive their schools more favourably in terms of 'Teachers' support for

[2] However, caution should be used when comparing the results of the impact of Year 2 self-perceptions and Year 5 self-perceptions, since the items that form the self-perception factors are not the same in both years, which were necessary to reflect differences in children's age and reading abilities in completing appropriate questionnaires. Therefore, it is not possible to separate what might be the impact of a different time point from the impact of a slightly different measure.

pupils' learning' have better outcomes. Headteachers appear to play an important role too in terms of perceptions of their interest in children and their impact on behavioural climate. Results suggest that encouraging greater pupil participation in school and enhancing these features of school culture will help to improve pupils' educational outcomes and 'Enjoyment of school'. However, high levels of 'Enjoyment of school' on their own will not promote better learning or behaviour. Improving the school culture in terms of experience of a 'Positive Social Environment' is also likely to promote better cognitive and developmental progress and overall outcomes.

Introduction

The Effective Pre-school and Primary Education Project 3-11 (EPPE 3-11) is a large-scale longitudinal study of the impact of pre-school and primary school on children's cognitive and social/behavioural development. The study has been following children from the start of pre-school (at age 3 years plus) through to the end of primary school. EPPE 3-11's most recent papers described children's Reading and Mathematics attainment at age 10 years (Sammons et al., 2007a), as well as children's social behaviour at this age (Sammons et al., 2007b). This paper builds on these reports and describes the relationship between pupils' self-perceptions, views of their primary school and their cognitive and social/behavioural outcomes at age 10 years.

Background

EPPE 3-11 began in 1996 with the aim of investigating the influence of Early Childhood provision on young children's progress and development during their time at pre-school, and to explore whether any pre-school effects continue to influence children after they start primary school. At the time, it was the first study of pre-schools in Europe to use a longitudinal, mixed method, educational effectiveness design based on sampling children in a range of different pre-school settings and using statistical approaches that enable the identification of individual pre-school centre effects. A detailed description of the research design of the study is reported in Sylva et al., (1999). In summary, six English Local Authorities (LAs) in five regions participated in the research with children recruited from six types of pre-school provision (nursery classes, playgroups, private day nurseries, local authority day nurseries, nursery schools and integrated centres [that combine education and care]). There were 2,857 children in the EPPE pre-school sample. An additional sample of 315 'Home' children (who had not attended a pre-school setting) was identified at entry to primary school, for comparison with those who had attended a pre-school centre. Therefore, the original sample totalled 3,172 EPPE children.

EPPE 3-11 involves the collection and analysis of a wide range of measures of children's development, child, family and home learning environment (HLE) characteristics and the characteristics of the pre-schools attended. In addition, value added measures of primary school academic effectiveness have been derived from independent statistical analyses of National assessment data sets conducted for all primary schools in England (Melhuish et al., 2006). These have been incorporated into the EPPE 3-11 child database to provide indicators of the academic effectiveness of the particular primary school an EPPE 3-11 child attended to complement the measures collected earlier on the pre-school setting attended.

Pupils' Cognitive Outcomes in Key Stage 2

Data on cognitive attainment was collected at different time points: the start of primary school and at the end of Years 1, 2 and 5. The recent report on Reading and Mathematics attainment (Sammons et al., 2007a) focused on children's educational attainment at the end of Year 5 (age 10) and progress from the end of Year 1 (age 6) to the end of Year 5 (age 10) in primary school. It explored a wide variety of child, parent, and family factors as predictors of attainment, including aspects of the Early years home learning environment (HLE) and aspects of the later HLE during Key stage 1 of primary school. It also investigated pre-school and primary school influences.

Pupils' Social/behavioural Outcomes in Key Stage 2

Data on social/behavioural outcomes was also collected at different time points: the start of primary school and at the end of Years 1, 2 and 5. Social/behavioural development was assessed by teachers using an extended version of the Goodman (1997) *Strengths and Difficulties Questionnaire*. The recent report on children's social/behavioural outcomes (Sammons et al., 2007b) focused on children's social/behavioural development at the end of

Year 5 (age 10) and progress from the end of Year 1 (age 6) to the end of Year 5 (age 10) in primary school. As in the report on cognitive outcomes, a wide range of information has been drawn upon, including teachers' assessments of social/behavioural development at ages 3, 5, 7 and 10; information about child, family and the Early years HLE as well as Key stage 1 HLE characteristics; measures of pre-school quality and indicators of effectiveness collected during the first phase of the study; and independent indicators of primary school academic effectiveness derived from analyses of National assessment data for several cohorts (Melhuish et al., 2006).

Pupils' Self-Perceptions and Views of Primary school in Key Stage 2

Questionnaires were designed to explore pupils' views about themselves and their primary school. These self-report measures were collected in Year 2 and again in Year 5. A range of statistical methods were used to investigate results for 2553 children for whom at least one self-reported measure was collected in Year 5 (80.5 per cent of the sample for whom valid baseline data had been collected in Year 2) (Sammons et al., 2008a; 2008b). Statistical analyses (both exploratory and confirmatory factor analysis) of the Year 5 questionnaire items were conducted in a similar way to that in Year 2 and in both cases identified a number of underlying dimensions (factors) that reflect patterns of associations amongst the questionnaire items. The description of factors for the Year 5 and Year 2 self-reported children's questionnaires are shown in Appendix 1. The factors related were revealed by the combined principle components analysis and the confirmatory factor analysis (Sammons et al., 2008a; 2008b).

The goal of this report is to explore relationships between pupils' self-perceptions, views of their primary school and their cognitive and social/behavioural outcomes at Year 5 (age 10), using models where background characteristics (i.e., child, family, and home learning environment) and prior attainment or developmental level were controlled for.

Aims

The aims of these analyses are:

- To explore the relationship of pupils' self-perceptions and their cognitive and social/behavioural outcomes at age 10, controlling for background characteristics and prior attainment or developmental level
- To explore the relationship of pupils' views of their primary school and their cognitive and social/behavioural outcomes at age 10, controlling for background characteristics and prior developmental level
- To investigate relative importance of pupils' self-perceptions and views of primary school in relation to children's outcomes when all pupils' factors are entered together in the model
- To examine the impact of earlier self-perceptions (measured at age 7) on later cognitive and social/behavioural outcomes at age 10.

Methods

This analysis focuses on all children for whom data on cognitive and social/behavioural attainment was collected in Year 5 of primary school (N=2,600). The findings on children's attainment, progress and social/behavioural development at Year 5 (age 10) are published in separate reports (see Sammons et al., 2007a; 2007b). Here we investigate the influences of children's views of themselves in school and their views of their primary school using self-reported data collected in Year 5 (age 10) and Year 2 (age 7).

A wide range of information has been used to analyze data for the full sample for which cognitive and social/behavioural outcome data were collected in Year 5 (age 10). This included standardised cognitive assessments, teachers' assessments of social/behavioural development, information about child, family and home learning environment (HLE) characteristics collected

from parental interviews when children were recruited to the study and again in Key Stage 1 (KS1), measures of pre-school quality and effectiveness collected during the first phase of the study, and independent measures of primary school academic effectiveness derived from analyses of National assessment data for several cohorts (Melhuish et al., 2006). In line with earlier analyses, the research uses multilevel models to explore the predictive power of different predictors in accounting for variation in children's outcomes at age 10. A more detailed description of the measures used can be found in Appendix 2.

Children's self-report measures of their self-perceptions were collected in both Year 2 (age 7) and Year 5 (age 10) of primary school, whereas pupils' self-reported measures of their views of primary school were collected in Year 5 (age 10) only. For this report, several aspects of pupils' self-perceptions are used as predictor measures: 'Enjoyment of school', 'Academic self-image', and 'Behavioural self-image'. In addition, aspects of pupils' views of primary school are also used as additional predictors: 'Teachers' support for pupils' learning', 'Headteacher qualities', and 'Positive Social Environment'.[3]

Overview of the report

Section 1: This section describes the sample used in the analyses, and also presents the summary of significant background characteristics for predicting children's Year 5 cognitive and social/behavioural outcomes.

Section 2: This section describes the results of value added multilevel analyses that explored the relationship between pupils' self-perceptions (measured in Year 5) and children's developmental progress. Value added models were analysed by including prior cognitive or social/behavioural measures, collected in Year 1, in addition to information about children's background characteristics and pupils' perceptions. The results support the hypothesis that positive self-image is associated with better cognitive and social/behavioural progress.

Section 3: This section describes the results of value added multilevel analyses that explored the relationship between pupils' views of primary school (measured in Year 5) and children's developmental progress. Similar to analyses for Section 2, value added models were analysed by including prior cognitive or social/behavioural measures, collected in Year 1, in addition to information about children's background characteristics and pupils' perceptions. The results indicate that more positive views of primary school are associated with better cognitive and social/behavioural progress.

Section 4: This section explores the relative importance of pupils' self-perceptions and views of primary school in relation to children's outcomes. Both pupils' self-perceptions and views of primary school were included in value added models together in order to evaluate which pupils' self-perception or views of primary school factors had a larger effect on children's progress. The results indicate that pupils' self-perception factors had a stronger effect on all cognitive and social/behavioural progress compared to pupils' views of primary school.

Section 5: This section describes the results of multilevel analyses that explored the impact of pupils' self-perceptions measured at an earlier age (Year 2 in primary school) on children's cognitive and social/behavioural outcomes in Year 5 as well as children's developmental progress. The results are similar to the results reported in Section 2, which support the hypothesis that better self-image, measured at an earlier time-point, is associated with better cognitive and social/behavioural outcomes in Year 5 and better developmental progress.

The final section summarises the main results and conclusions.

[3] Principal components analysis was used to identify a number of underlying factors (aspects) from the self-report survey. The description of items that form each of these factors identified from the Year 5 and Year 2 self-reported children's questionnaire are shown in Appendix 1.

Section 1: Description of the Sample and Important Background Characteristics Related to the Outcomes at the End of Year 5

1.1. Characteristics of the sample

The sample of EPPE 3-11 children used in the analyses for this report is the same as the sample of children used for the two recent EPPE 3-11 reports on children's Reading and Mathematics attainment at age 10 years (Sammons et al., 2007a) and children's social behaviour at the same age (Sammons et al., 2007b). Out of the total EPPE sample of children that have been followed through primary school, 2,600 children had at least one indicator of cognitive outcome or social/behavioural development collected during Year 5 of primary school. Table 1.1 provides a brief summary of background characteristics for this sample.

Out of 2,600 children in this sample, fifty-one per cent of children were male and majority of the sample (75%) were of White UK heritage. There were nine per cent of children with English as an Additional Language (EAL) and four per cent of children who still required EAL support at age 10. With respect to family structure, the majority of children (70%) lived with one or two siblings, almost fifteen per cent were singletons and fourteen per cent were part of larger families with 3 siblings or more.

A number of measures collected at the entry to the study from parent interviews provided an indication of the home learning environment (HLE) in the early years (for further details see Melhuish et al., 2008). The Early years HLE measure is based on the frequency of engagement in specific activities involving the child, such as teaching the alphabet, reading to the child, taking the child to the library etc. Table 1.1 shows that just under half (45%) of children had relatively high scores (25+) on an index of Early years home learning environment (HLE) measured in the pre-school period. A substantial minority of children (31%) were from families where scores on the Early years HLE index were relatively low (below 20).

In terms of family background characteristics, about eighteen per cent of both mothers and fathers had a degree or higher qualification. The large majority, however, were educated to GCSE level or below – almost three quarters of mothers and fifty per cent of fathers (note that 23% of children were in families where the father was recorded as absent and this contributed to the difference here). Low family socio-economic status (SES) was recorded for seventeen per cent of the sample, nearly half (47.1%) were in the medium (skilled manual or skilled non manual) group and thirty-six per cent were identified as from the higher (professional) groups. A fifth of children in the sample lived in households where parents reported no earned income, while for seventeen per cent the family earned income was reported to be under £17,500 (data were collected towards the end of KS1 when children were aged around 6 years old), and twenty percent were recorded as eligible for free school meals (FSM). On an index of multiple disadvantage twenty-seven percent were identified as of medium to high disadvantage (3+ disadvantages).

Note that not all 2,600 children had valid data for every outcome in Year 5 used in the analyses. For social/behavioural outcomes at Year 5 there were 2,520 children with valid data, whereas for Reading outcomes there were 2,549 children and for Mathematics 2,532 children with valid data. Therefore, the sample size varies depending on the outcome used in the analyses. In addition, not all 2,600 children had valid data for self-perception factors and views of primary school factors. In the analyses we included a missing data category for each self-perception factor in order to retain the same sample size (overall, there were not more than 61 children who had missing information on either self-perception factors or views of primary school factors).

Table 1.1: Characteristics of children with valid Year 5 data (n = 2600)
Some figures do not include non-response to questions therefore the total is not always 2,600 (100%)

	n	%
Gender		
Male	1327	51.0
Female	1273	49.0
Ethnicity		
White UK Heritage	1948	75.0
White European Heritage	80	3.1
Black Caribbean Heritage	96	3.7
Black African Heritage	51	2.0
Indian Heritage	53	2.0
Pakistani Heritage	137	5.3
Bangladeshi Heritage	29	1.1
Mixed Heritage	146	5.6
Any Other Ethnic Minority Heritage	57	2.2
English as an Additional Language (EAL)	245	9.4
Child needs EAL support at Year 5	98	3.8
Number of siblings		
No siblings	388	14.9
1- 2 sibling	1823	70.1
3+ siblings	365	14.0
Early years Home Learning Environment (HLE) Index		
0 – 13	233	9.3
14 – 19	542	21.7
20 – 24	600	24.1
25 – 32	819	32.8
33 – 45	301	12.1
Type of Pre-School		
Nursery class	490	18.9
Playgroup	499	19.2
Private day nursery	445	17.1
Local authority day nursery	334	12.9
Nursery school	435	16.7
Integrated (Combined) centre	144	5.5
'Home' sample	253	9.7
Mother's Qualifications		
None	493	19.7
Vocational	377	15.0
16 Academic	948	37.8
18 Academic	214	8.5
Miscellaneous	21	0.8
Degree and higher degree	453	18.1
Father's Qualifications		
None	406	15.7
Vocational	297	11.5
16 academic	576	22.3

Father's Qualifications continued		
18 academic	189	7.3
Other professional/ miscellaneous	16	0.6
Degree and higher degree	465	18.0
No father information	597	23.2
Family Highest SES		
Professional Non Manual	238	9.4
Other Professional Non Manual	663	26.2
Skilled Non Manual	822	32.4
Skilled Manual	372	14.7
Semi-Skilled	317	12.5
Unskilled	59	2.3
Never Worked	63	2.5
FSM (at Year 5 or earlier)		
Free School Meals	519	20.0
Salary of family		
No salary	514	19.8
£2,500 – 17,499	444	17.1
£17,500 – 29,999	385	14.8
£30,000 – 37,499	250	9.6
£37,500 – 67,499	429	16.5
£67,500 – 132,000+	162	6.2
Total Multiple Disadvantage Index		
0 (low disadvantage)	573	23.8
1	669	27.8
2	517	21.5
3	300	12.5
4	192	8.0
5 plus (high disadvantage)	155	6.4

1.2. Summary of significant background characteristics used for predicting cognitive and social/behavioural outcomes in Year 5

Recent papers from the EPPE 3-11 project described children's Reading and Mathematics attainment at age 10 years (Sammons et al., 2007a), as well as children's social behaviour at this age (Sammons et al., 2007b). The goal of this report is to test the impact of pupils' self-perceptions and their views of their primary school on their cognitive and social/behavioural outcomes at Year 5. This was done using the final contextualised models from the above mentioned reports of the cognitive and social/behavioural outcomes at Year 5 in which important background characteristics were controlled for. The contextualised model shows the best set of predictors of children's attainment and which measures show a specific impact over and above other influences, helping to tease out the strongest predictors. This section summarizes important background characteristics that were related to each cognitive and social/behavioural outcome in Year 5.

Reading and Mathematics at the end of Year 5

As reported in Sammons et al., (2007a), several child and family characteristics have an important impact on attainment in Reading and Mathematics in Year 5. The quality of the Early years home learning environment (HLE) and parents' (especially mothers') qualification levels were the most important background factors relating to a child's attainment in Reading and

Mathematics at Year 5. In addition, low birth weight, need for support with English as an additional language (EAL), early health or developmental problems and socio-economic status (SES) were also significant background factors related to cognitive outcomes in Year 5.[4]

'Self-regulation', 'Pro-social' behaviour, 'Hyperactivity', and 'Anti-social' behaviour at the end of Year 5

As reported in Sammons et al. (2007b), several child and family characteristics have an important impact on social/behavioural outcomes in Year 5. Similar to cognitive outcomes, the quality of the Early years home learning environment (HLE) and Key Stage 1 HLE were the most important background factors especially for 'Hyperactivity' and 'Self-regulation' at Year 5. In addition, gender, early health or developmental problems, need for support with English as an additional language (EAL), parents' (especially mothers') qualification levels and family income were also significant background factors related to social/behavioural outcomes in Year 5.[5]

[4] For the detailed description of these findings please refer to Sammons et al. (2007a). http://www.ioe.ac.uk/schools/ecpe/eppe/eppe3-11/eppe3-11pubs.htm

[5] For the detailed description of these findings please refer to Sammons et al. (2007b). http://www.ioe.ac.uk/schools/ecpe/eppe/eppe3-11/eppe3-11pubs.htm

Section 2: The Relationship between Pupils' Self-Perceptions and Progress from Year 1 to Year 5

The analysis strategy for this report first involved investigating the relationship between pupils' self-perceptions, views of primary school (measured in Year 5) and cognitive and social/behavioural outcomes in Year 5, controlling for background characteristics only (i.e. the contextualised models). The second set of analyses were focused on pupils' developmental *progress* over time using value added models that include prior (Year 1) attainment and developmental level to explore whether pupils' perception factors, found to be significant predictors of Year 5, were also associated with differential progress (value added) from Year 1 to Year 5, while still controlling for important background characteristics. In order to test the effects of pupils' perceptions on their academic and social/behavioural progress between Year 1 (age 6) and Year 5 (age 10), value added multilevel models were constructed, in which the same outcome measures obtained at Year 1 were used as additional predictors.

The effects of pupils' self-perceptions on cognitive and social/behavioural outcomes were similar in terms of the results from the contextualised models and value added models. Therefore to avoid repetition, we report the results of value added models only. The summary of significant results of contextualised models is presented in Appendix 3. The comparison of variance components and intra-school correlations between contextualised and value added models are presented in Appendix 4. Detailed results of final contextualised models and value added models are presented in Appendix 5.

Considering that including prior attainment of pupils' outcomes measured in Year 1 accounts for a large amount of pupil level variance in the outcomes measured in Year 5, we might expect weaker effects for pupils' self-perceptions and their views of primary school on their developmental progress from Year 1 to Year 5 compared to the effect on their developmental level in Year 5 when prior attainment is not taken into account. However, any effect left over after prior developmental level has been taken into account therefore indicates that a given pupils' perception factor not only predicts their level of development at a given time point (developmental level) but also rate of improvement or change over time (progress). Results of value added models that included significant pupils' views of primary school factors for each pupil outcome are presented in Section 3. In this section, results of value added models for each pupil outcome that included significant pupils' self-perception factors are presented by the different self-perception factor measured in Year 5.

Relationships between 'Enjoyment of school' and Children's Progress from Year 1 to Year 5

As shown in Figure 2.1, children who reported medium levels of 'Enjoyment of school' had better progress in Reading over time than children who either reported low or high levels of 'Enjoyment of school' in Year 5. However, the findings for the Mathematics and 'Self-regulation' outcomes suggest that children who reported medium or high levels of 'Enjoyment of school' had better progress in Mathematics and 'Self-regulation' than children who reported low levels of 'Enjoyment of school' in Year 5 (Figure 2.1 and 2.2). A more linear relationship between 'Enjoyment of school' and children's outcomes was evident for other social/behavioural outcomes. Children with higher levels of 'Enjoyment of school', measured in Year 5, showed more improvement in 'Pro-social' behaviour and larger reductions in 'Hyperactivity' and 'Anti-social' behaviour (Figure 2.2). 'Enjoyment of school' had the smallest, but still significant, effect on 'Anti-social' behaviour (ES=-0.16).

In summary, the factor 'Enjoyment of school' was positively related to Mathematics and social/behavioural outcomes, suggesting that children who enjoyed going to school and were interested in classes had higher scores in Mathematics, higher levels of 'Pro-social' behaviour and 'Self-regulation', but also lower levels of 'Hyperactivity' and 'Anti-social' behaviour. However,

there was a different relationship between 'Enjoyment of school' and Reading outcomes; medium levels of 'Enjoyment of school' were linked with higher Reading scores than either high or low levels of 'Enjoyment of school'. This finding suggests that children who enjoyed going to and being in school the most did not necessarily have the highest Reading scores.

Figure 2.1: The effects of 'Enjoyment of school' on children's Reading and Mathematics progress from Year 1 to Year 5

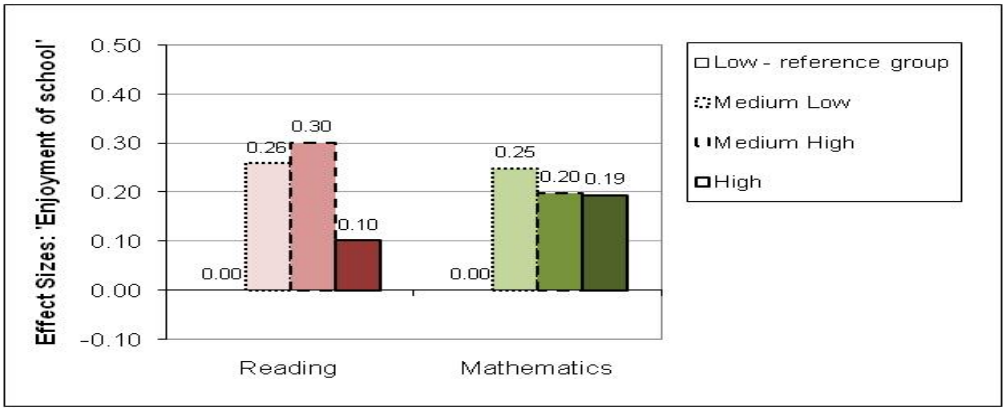
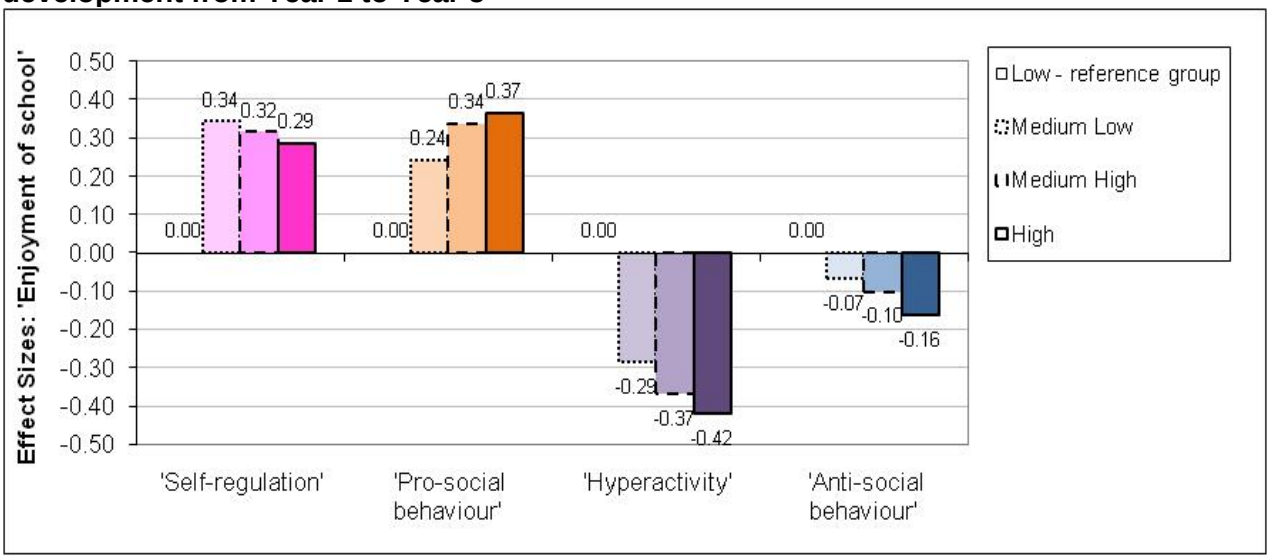


Figure 2.2: The effects of 'Enjoyment of school' on children's social/behavioural development from Year 1 to Year 5

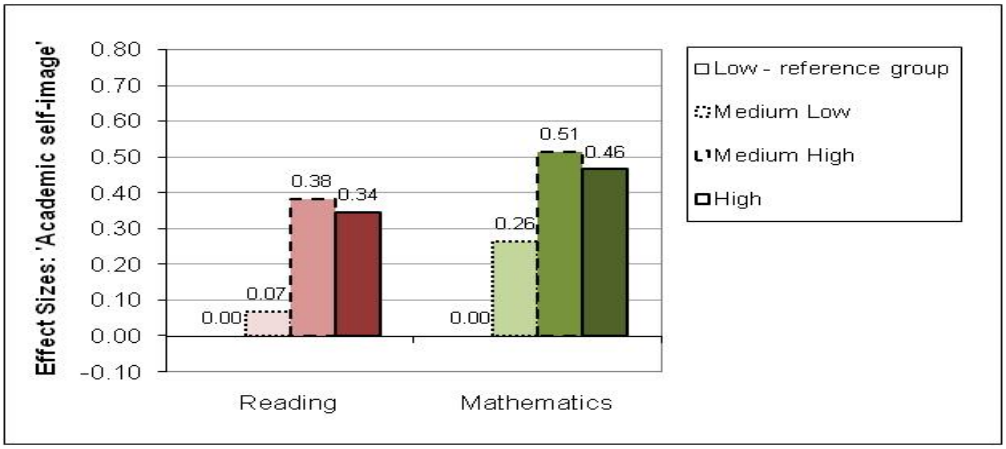


Relationships between 'Academic self-image' and Children's Progress from Year 1 to Year 5

As might be expected, 'Academic self-image' had the strongest effect on progress in Reading (ES=0.34; Figure 2.3), Mathematics (ES=0.46; Figure 2.3) and 'Self-regulation' (ES=0.56; Figure 2.4). Children with more positive 'Academic self-image' measured in Year 5 had better progress in Reading and Mathematics and better improvement in 'Self-regulation'. However, it is important to note that the findings only show that the association between 'Academic self-image' and 'Self-regulation' and cognitive outcomes is moderately strong, which was expected since the literature has consistently shown that there is a strong *reciprocal* relationship between academic self-concept and academic achievement (Marsh, 1994; 2006; Marsh and Yeung, 1997). Therefore, children's levels of academic self-concept affect their performance in school, and, in addition, their self-concepts are also influenced by their academic achievement. The relative predictive power of Reading and Mathematics attainment on 'Academic self-image' in Year 5 was tested by Sammons et al., (2008a), and the result also showed that there is a positive relationship between Reading and Mathematics attainment and 'Academic self-image'.

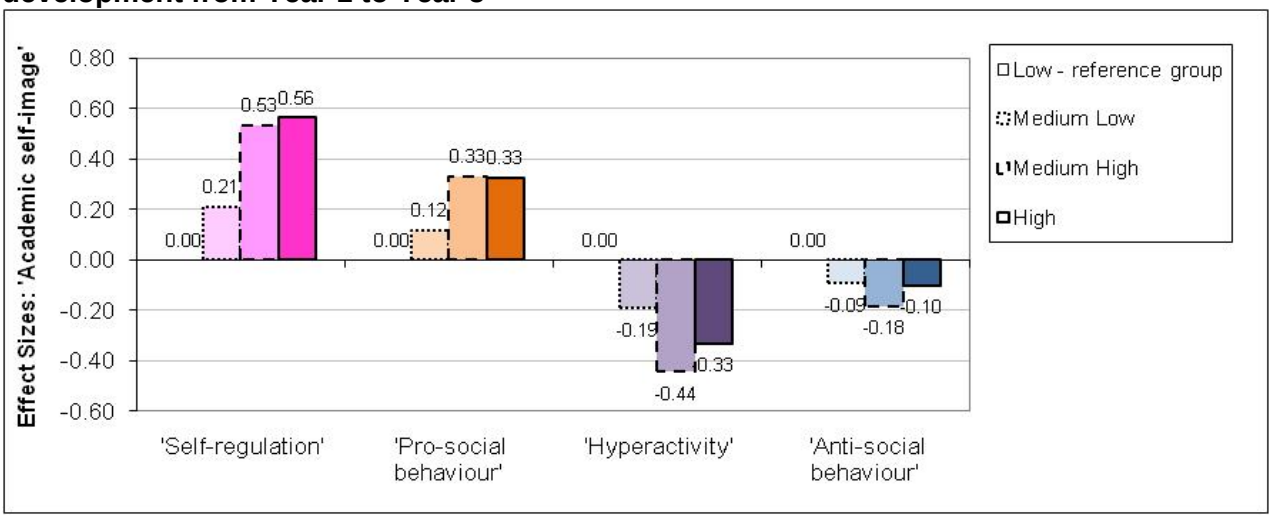
The strong effect of 'Academic self-image' on 'Self-regulation' is similar to findings for Reading and Mathematics attainment. In a previous report (Sammons et al., 2007b) we have shown that 'Self-regulation' is the social/behavioural outcome most closely associated with attainment. Therefore, it is not surprising that 'Academic self-image' had the strongest association with 'Self-regulation' compared to the other social/behavioural outcomes. Similar to cognitive outcomes, it is likely that there is a *reciprocal* relationship between academic self-concept and 'Self-regulation', which suggests that children's levels of academic self-concept affect their 'Self-regulation' in school, while their self-concepts may also be influenced by their 'Self-regulation'.

Figure 2.3: The effects of 'Academic self-image' on children's Reading and Mathematics progress from Year 1 to Year 5



The effects of 'Academic self-image' were also significant for 'Pro-social' behaviour, 'Hyperactivity' and 'Anti-social' behaviour (Figure 2.4). Children with higher levels of 'Academic self-image' measured in Year 5 showed more improvement in 'Pro-social' behaviour and a larger reduction in 'Hyperactivity'. The effect of 'Academic self-image' on 'Anti-social' behaviour was small but still significant suggesting that medium and high levels of 'Academic self-image' were related to larger reductions in 'Anti-social' behaviour.

Figure 2.4: The effect of 'Academic self-image' on children's social/behavioural development from Year 1 to Year 5

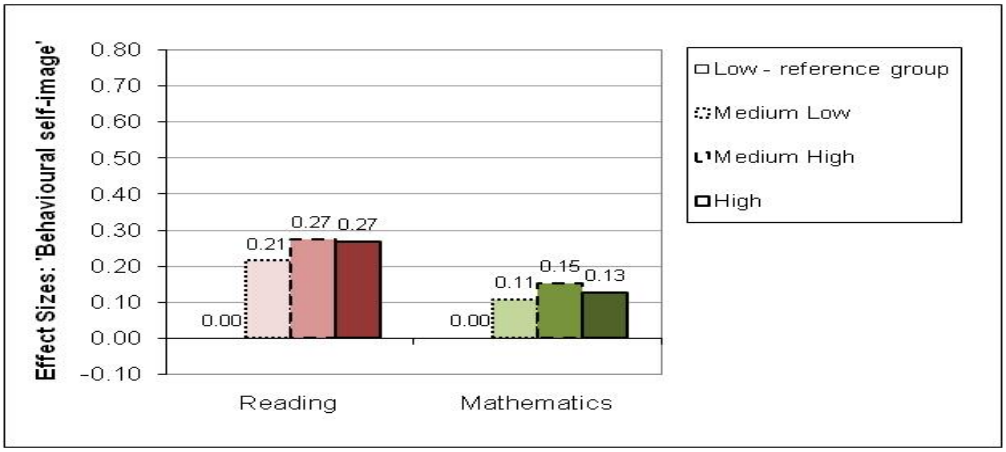


Relationships between 'Behavioural self-image' and Children's Progress from Year 1 to Year 5

'Behavioural self-image' had the strongest effect on 'Pro-social' behaviour (ES=0.68; Figure 2.6), 'Hyperactivity' (ES=-1.05; Figure 2.6) and 'Anti-social' behaviour (ES=-0.48; Figure 2.6). Findings suggest that higher levels of 'Behavioural self-image' are related to greater

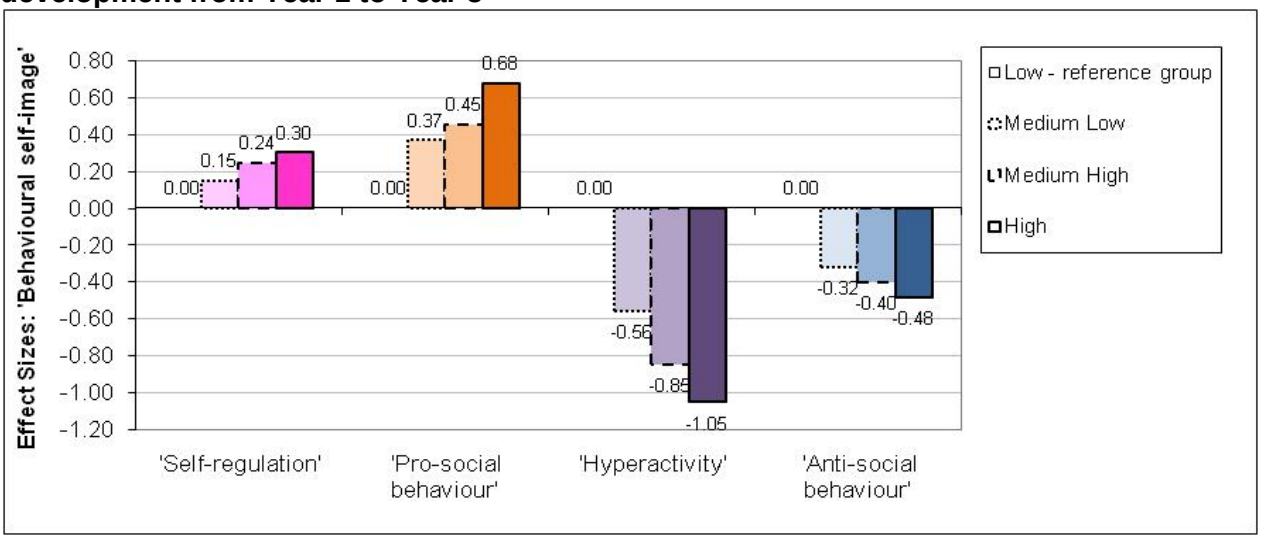
improvement in 'Pro-social' behaviour and larger reductions in 'Hyperactivity' and 'Anti-social' behaviour. The results are in line with other research, which shows that a children's perception of their own behaviour is the strongest predictor of children's classroom behaviour, group participation, and attitude toward authority, as rated by their teachers (Haynes, 1990). In the EPPE 3-11 sample, children with a positive behaviour self-perception show more positive social behaviour in Year 5 (as identified by teachers' reports). In addition, there is likely to be a reciprocal effect between pupils' 'Behavioural self-image' and their social behaviour: children might become aware of their positive or negative behaviour when a teacher, a parent or other children praise them or warn them about their behaviour. Therefore, the children's behaviour and their 'Behavioural self-image' are affecting each other and mutually reinforcing.

Figure 2.5: The effects of 'Behavioural self-image' on children's Reading and Mathematics progress from Year 1 to Year 5



'Behavioural self-image' was also significantly related to 'Self-regulation' and cognitive outcomes (Figure 2.5 & 2.6). Findings suggest that children with higher levels of Behavioural 'Self-regulation' showed greater improvement in 'Self-regulation' (ES=0.30) and higher progress in Reading (ES=0.27). The effect on Mathematics was small but significant, suggesting that children with medium and high levels of 'Behavioural self-image' had a higher progress in Mathematics.

Figure 2.6: The effects of 'Behavioural self-image' on children's social/behavioural development from Year 1 to Year 5



The effects of all three Self-perception factors on Children's Progress from Year 1 to Year 5

Results of value added models presented so far in this section have only showed the effects of self-perception factors when they were individually entered into the models. In this section, we summarise the results of findings when all three self-perception factors are tested together in the models for each outcome, controlling for background characteristics and prior attainment or developmental level. In these analyses we wanted to identify which set of the three self-perception factors had the strongest effect on a particular outcome.

Table 2.1 summarizes the main results from the value added multilevel models of children's cognitive and social/behavioural progress from Year 1 to Year 5 when pupils' self-perceptions were entered as predictors in the models. It can be seen that all three self-perception factors measured in Year 5 were significant for progress in Reading. For the 'Self-regulation' outcome, only 'Academic self-image' had a significant effect, suggesting that high 'Academic self-image' is more important for improvement in 'Self-regulation' in Year 5 than having high levels of 'Behavioural self-image' or 'Enjoyment of school'. Similarly, high levels of 'Behavioural self-image' are more important for reducing negative social behaviours than having high 'Academic self-image' or 'Enjoyment of school'.

Table 2.1: Summary of relationships between Year 5 pupils' self-perceptions and children's cognitive progress and social/behavioural development from Year 1 to Year 5

Year 5	Reading	Mathematics	'Self-regulation'	'Pro-social' behaviour	'Hyperactivity'	'Anti-social' behaviour
'Enjoyment of school'[1]	0.16* Med Low gp	0.14* Med Low gp				
'Academic self-image'[1]	0.33*	0.49*	0.56*	0.22* High Med gp		
'Behavioural self-image'[1]	0.15*			0.61*	-1.05*	-0.48*
Reference group: Low Effect sizes (ES) represent differences between the lowest and highest scoring groups unless stated otherwise.						

*p<0.05 [1] Results presented are from final models showing only significant factors when all three *pupils' self-perception factors* are entered together.

Relative to the effects of 'Academic self-image' and 'Behavioural self-image', 'Enjoyment of school' did not have a significant effect on social/behavioural outcomes and there was just a small but significant effect on cognitive outcomes. Considering that the curvilinear relationship between 'Enjoyment of school' and the progress in Reading appeared to be accentuated when the other two self-perception factors were also in the model, the interaction between 'Enjoyment of school' and the strongest predictor, 'Academic self-image', was tested to get a better understanding of the underlying relationship. Figure 2.7 shows that low levels of 'Academic self-image' were related to the lowest progress in Reading over time regardless of the level of 'Enjoyment of school'. However, for higher levels of 'Academic self-image', the 'Enjoyment of school' matters: medium levels of 'Enjoyment of school' were related to better progress in Reading over time.

Even though the curvilinear relationship between 'Enjoyment of school' and progress in Mathematics is only somewhat evident when the 'Enjoyment of school' was entered together with the 'Academic self-image' factor (compared to the findings for progress in Reading), we also tested the interaction between these two predictors in the model to get a better understanding of the underlying relationship. Interestingly, Figure 2.8 shows a somewhat different pattern of results when compared to results of progress in Reading. In this case low levels of 'Academic self-image' were again related to the lowest progress in Mathematics but only if a child did not have a high level of 'Enjoyment of school'. However, there is a different pattern of results for higher levels of 'Academic self-image': medium levels of 'Enjoyment of school' were related to the highest progress in Mathematics. Findings of both interactions suggests that children with

higher levels of 'Academic self-image' who either do not enjoy school or enjoy school very much have similar progress in Reading and Mathematics; however their Reading and Mathematics progress is lower than that of children with medium levels of 'Enjoyment of school' and similar levels of 'Academic self-image'.

Figure 2.7: The combined effects of 'Enjoyment of school' and 'Academic self-image' on progress in Reading from Year 1 to Year 5

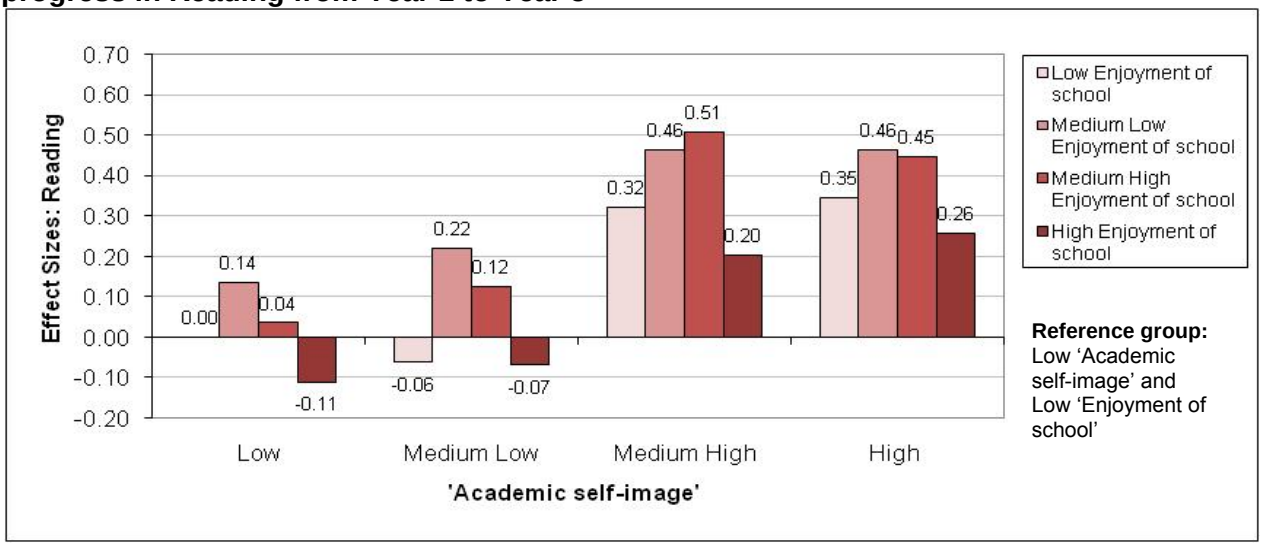
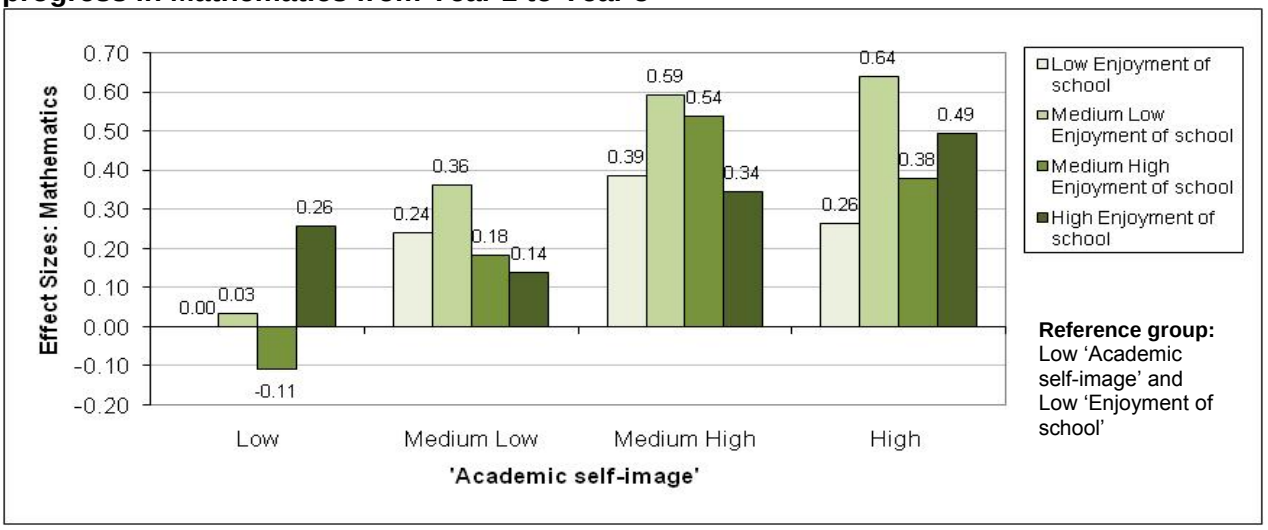


Figure 2.8: The combined effects of 'Enjoyment of school' and 'Academic self-image' on progress in Mathematics from Year 1 to Year 5



In summary, children's 'Academic self-image' was the strongest predictor of cognitive progress and improvement in 'Self-regulation', whereas children's 'Behavioural self-image' was the strongest predictor of 'Pro-social' behaviour, 'Hyperactivity' and 'Anti-social' behaviour. However, it is important to note that it is not possible to conclude that there is a causal effect of self-perceptions on cognitive and social/behavioural outcomes in Year 5. As mentioned before, the findings only show that the relationship between 'Academic self-image' and cognitive outcomes is strong, which was expected since the literature has consistently shown that there is a strong *reciprocal* relationship between academic self-concept and academic achievement (Marsh, 1994; 2006; Marsh and Yeung, 1997). Therefore, children's levels of academic self-concept may affect their performance in school and in turn their academic achievement influences their academic self-concept. Similarly, there might be a reciprocal relationship between 'Academic self-image' and 'Self-regulation', as well as 'Behavioural self-image' and the other social/behavioural outcomes.

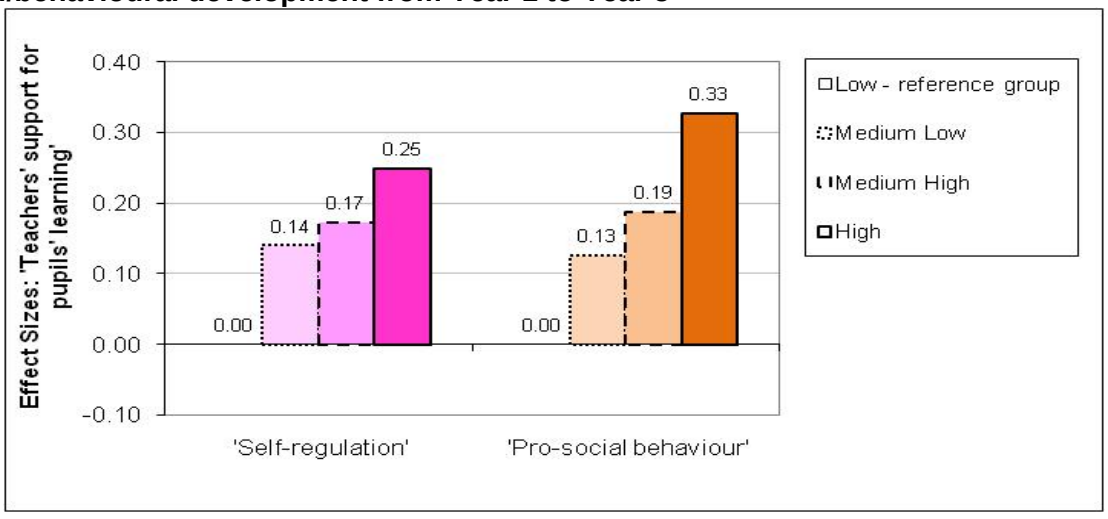
Section 3: The Relationship between Pupils' Views of Primary School and Progress from Year 1 to Year 5

Further analyses were conducted using the pupils' views of their primary school. The results presented in this section are from analyses focused on children's developmental *progress* over time using value added models that include prior (Year 1) attainment and developmental level to explore whether pupils' views of primary school were associated with differential progress (value added) from Year 1 to Year 5, while controlling for important background characteristics. The effects of pupils' views of their primary school on cognitive and social/behavioural outcomes were similar in terms of the results from the contextualised models and value added models. Therefore to avoid repetition, we also report the results of value added models in this section only. The summary of significant results of contextualised models is presented in Appendix 3. The comparison of variance components and intra-school correlations between contextualised and value added models are presented in Appendix 4. Detailed results of final contextualised models and value added models are presented in Appendix 5. Results of value added models for each child outcome, that included significant factors of pupils' views of primary school, are presented by the different views of primary school factors measured in Year 5.

Relationships between 'Teachers' support for pupils' learning' and Children's Progress from Year 1 to Year 5

As Figure 3.1 shows, 'Teachers' support for pupils' learning', measured in Year 5, was only significantly related to 'Self-regulation' and 'Pro-social' behaviour. Findings suggest that children who reported having higher levels of 'Teachers' support for pupils' learning' in their school had greater improvement in 'Self-regulation' (ES=0.25) and 'Pro-social' behaviour (ES=0.33). The results support the view that school climate and teachers' support help to promote individual children's 'Self-regulation' and 'Pro-social' behaviour and also suggest that any improvement in perceptions for the low group would be likely to benefit behavioural outcomes.

Figure 3.1: The effect of 'Teachers' support for pupils' learning' on children's social/behavioural development from Year 1 to Year 5

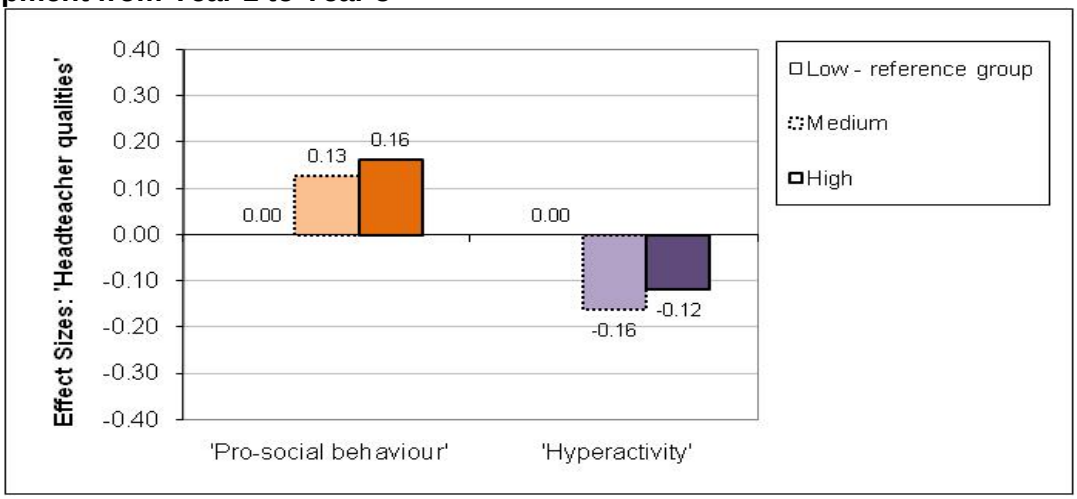


Relationships between 'Headteacher qualities' and Children's Progress from Year 1 to Year 5

The factor 'Headteacher qualities', measured in Year 5, had only a small but significant effect on 'Pro-social' behaviour and 'Hyperactivity' (Figure 3.2). Findings suggest that children who reported medium or high levels of 'Headteacher qualities' in their school showed more improvement in 'Pro-social' behaviour (ES=0.16) and a larger reduction in 'Hyperactivity' (ES=-

0.16). Even though the factor 'Headteacher qualities' was not related to progress in cognitive outcomes in Year 5, it was related to Reading attainment (ES=0.12) in Year 5 (i.e., not controlling for prior attainment, see Appendix 3). Overall, the findings suggest that when a child perceives that the Headteacher is interested in children and is making sure that children behave, children have better 'Pro-social' behaviour, lower levels of 'Hyperactivity', and better Reading scores in Year 5 (age 10).

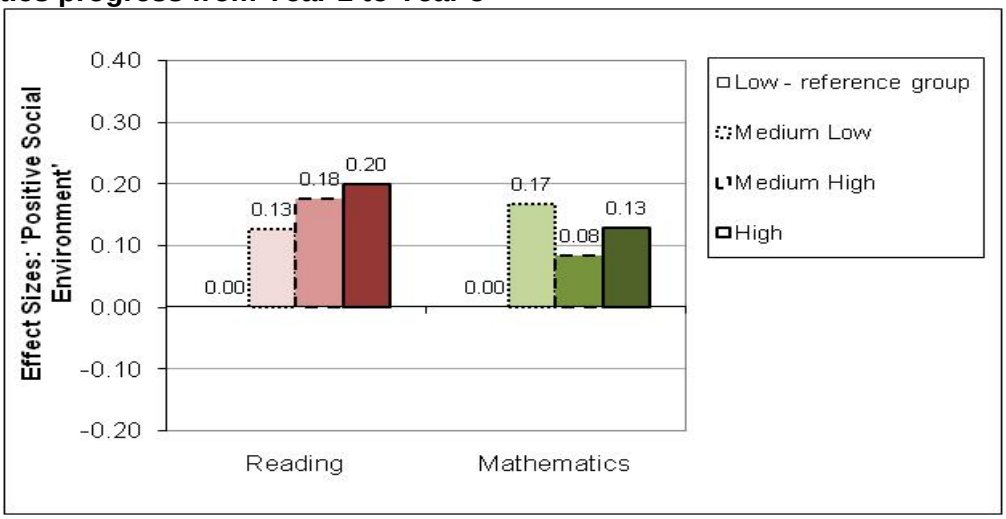
Figure 3.2: The effects of 'Headteacher qualities' on children's social/behavioural development from Year 1 to Year 5



Relationships between 'Positive Social Environment' and Children's Progress from Year 1 to Year 5

Of the three pupils' views of primary school factors, measured in Year 5, 'Positive Social Environment' was the only factor related to all children's outcomes. 'Positive Social Environment' factor had the strongest effect on 'Hyperactivity', 'Pro-social' behaviour and Reading progress. The findings suggest that children who reported having higher levels of 'Positive Social Environment' in their school in Year 5 had larger reductions in 'Hyperactivity' (ES=-0.41), larger improvements in 'Pro-social' behaviour (ES=0.30) and made greater progress in Reading (ES=0.20).

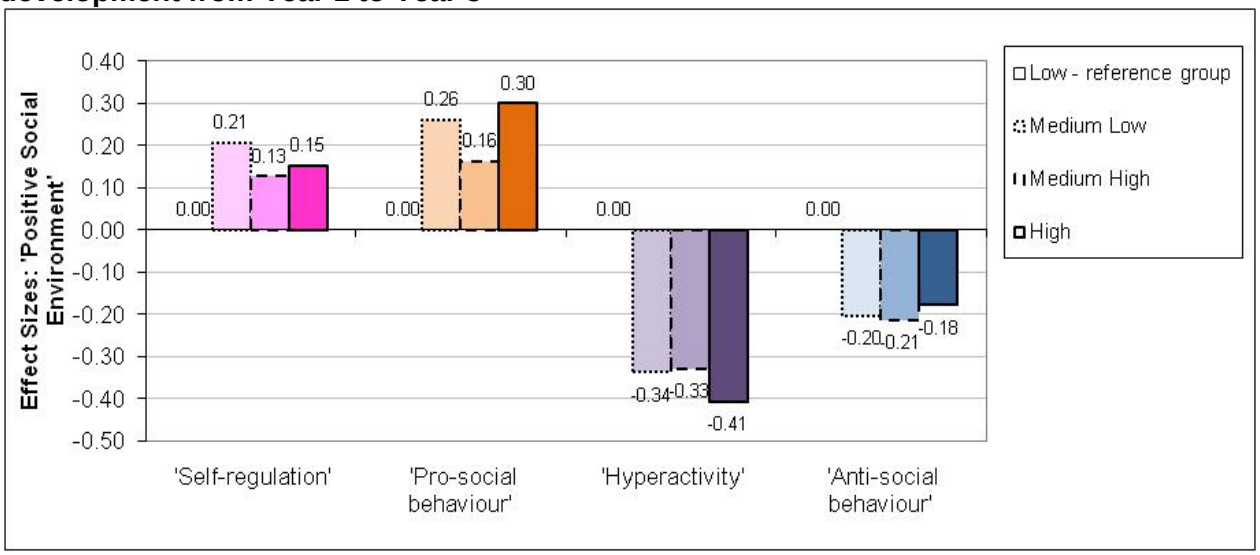
Figure 3.3: The effects of 'Positive Social Environment' on children's Reading and Mathematics progress from Year 1 to Year 5



There was also a small but significant effect on progress in Mathematics, 'Self-regulation' and 'Anti-social' behaviour. As Figures 3.3 and 3.4 show, children who perceived medium and high

levels of 'Positive Social Environment' in their school in Year 5 had greater progress in Mathematics in Year 5 (ES=0.17), larger improvements in 'Self-regulation' and larger reductions in 'Anti-social' behaviour than children who perceived low levels of 'Positive Social Environment'. These findings suggest that when a child feels safe and peers are viewed as friendly, both educational and social/behavioural outcomes benefit.

Figure 3.4: The effect of 'Positive Social Environment' on children's Social/behavioural development from Year 1 to Year 5



The effects of all three Views of primary school factors on Children's Progress from Year 1 to Year 5

In this section we have so far only reported findings of value added models in which each views of primary school factor was entered separately into the model. Now, we summarise the results of findings when all three pupils' views of primary school factors are tested together in the model for each outcome, controlling for background characteristics and prior attainment or developmental level. In these analyses we wanted to identify which set of the three factors of views of primary school had the strongest effect on a particular outcome. Table 3.1 summarizes the main results from the value added multilevel models of children's cognitive and social/behavioural progress from Year 1 to Year 5 when pupils' views of their primary school were entered as predictors in the models.

Table 3.1: Summary of relationships of Year 5 pupils' views of primary school and children's cognitive progress and social/behavioural development from Year 1 to Year 5

Year 5	Reading	Mathematics	'Self-regulation'	'Pro-social' behaviour	'Hyperactivity'	'Anti-social' behaviour
'Teachers' support for pupils' learning'[1]			0.25*	0.30*		
'Headteacher qualities'[1]						
'Positive Social Environment'[1]	0.20*	0.17* Med Low gp		0.20*	-0.41*	-0.20* Med Low gp
Reference group: Low Effect sizes (ES) represent differences between the lowest and highest scoring groups unless stated otherwise.						

*p<0.05 [1] Results presented are from final models showing only significant factors when all three *views of primary school factors* are entered together.

Relative to the effects of 'Positive Social Environment' and 'Teachers' support for pupils' learning', 'Headteacher qualities' did not have a significant effect on any child outcomes. The factor 'Teachers' support for pupils' learning' was the only significant predictor of improvement in

‘Self-regulation’, suggesting that improvement in ‘Self-regulation’ is more related to support for learning that children get from their teachers in school than to either good social environment or qualities of headteachers in schools. However, ‘Teachers’ support for pupils’ learning’ together with the ‘Positive Social Environment’ factor had a significant effect on improvement in ‘Pro-social’ behaviour. Relative to the other two views of primary school factors, ‘Positive Social Environment’ was the only significant predictor of cognitive outcomes and reductions in ‘Hyperactivity’ and ‘Anti-social’ behaviour. This suggests that for better cognitive outcomes and particularly for reducing negative social behaviour in school, having a good social environment is more important than getting support from teachers in learning or headteachers being interested in children in school.

In summary, out of three perceived primary school factors, pupils’ views of ‘Positive Social Environment’ were related to almost all children’s outcomes, although the effects were often equal for medium and high levels. This finding suggests that a child who attends a school in which he or she feels safe and where their peers are friendly will show significant improvement in cognitive and social/behavioural outcomes over time. In addition, attending a school where a child gets support for learning from their teacher’s, leads to better progress in developing a child’s ‘Pro-social’ behaviour and ‘Self-regulation’. The results therefore broadly support the view that in safer and supportive schools, but not necessarily in only extremely safe or extremely supportive schools, there are measurable benefits on children’s academic and social/behavioural outcomes.

Section 4: The Effect of Pupils' Self-perceptions and Views of Primary School on Progress from Year 1 to Year 5

In Sections 2 and 3 we reported findings of value added models in which self-perception factors and views of primary school factors were entered independently into the models. In this section, we summarise the results of findings when pupils' self-perceptions and views of primary school factors are tested together in the models for each outcome, controlling for background characteristics and prior attainment or developmental level. In these analyses we wanted to investigate the relative importance of pupils' self-perceptions and views of primary school in relation to their outcomes by identifying which set of self-perception factors and views of primary school factors had the strongest effect on a particular outcome. Table 4.1 summarizes the main results from the value added multilevel models of pupils' cognitive and social/behavioural progress from Year 1 to Year 5 when pupils' self-perceptions and views of their primary school were entered together as predictors in the models.

Relative to the effects of pupils' views of primary school, pupils' self-perception factors had a stronger effect on both cognitive and social/behavioural outcomes. For cognitive outcomes and 'Self-regulation', when all self-perception factors and views of primary school factors were entered together in the model, only the self-perception factors were significant. This suggests that pupils' perceptions of themselves, particularly 'Academic self-image', had a stronger relationship with progress in Reading and Mathematics and increased 'Self-regulation' than any aspect of pupils' views of primary school. However, when all self-perception factors and views of primary school factors were entered together in the model, significant effects from both types of factors were found for 'Pro-social' behaviour, 'Hyperactivity' and 'Anti-social' behaviour outcomes. As shown in Table 4.1, improvement in 'Pro-social' behaviour is significantly related to both 'Behavioural self-image' and 'Teachers' support for pupils' learning' factors. Even though 'Teachers' support for pupils' learning' had a positive impact on improvement in 'Pro-social' behaviour in this analysis (ES=0.23), 'Behavioural self-image' still showed the strongest impact on improvement in 'Pro-social' behaviour (ES=0.64). Similarly, reduction in 'Hyperactivity' and 'Anti-social' behaviour is significantly related to both 'Behavioural self-image' and 'Positive Social Environment'. However, 'Positive Social Environment' had a significant and moderate impact on reductions in 'Hyperactivity' (ES=-0.26), in Year 5 in this analysis, but 'Behavioural self-image' still showed the strongest impact on 'Hyperactivity' (ES=-1.03).

Overall, pupils' self-perceptions (particularly 'Academic self-image' and 'Behavioural self-image') were stronger predictors of their educational and social/behavioural outcomes at age 10 than pupils' views of their primary school. However, pupils' views of primary school were also significantly related to some social/behavioural outcomes. In addition to having high levels of 'Behavioural self-image', a child who attends a school in which he or she feels safe and where their peers are friendly, will show significant reduction in 'Hyperactivity' and 'Anti-social' behaviour over time. Similarly, attending a school where a child gets support for learning from their teacher's, leads to better progress in developing a child's 'Self-regulation' alongside having high levels of 'Behavioural self-image'.

Table 4.1: Summary of relationships between Year 5 pupils' self-perceptions and their views of primary school with children's cognitive and social/behavioural development progress from Year 1 to Year 5

Year 5	Reading	Mathematics	'Self-regulation'	'Pro-social' behaviour	'Hyperactivity'	'Anti-social' behaviour
'Enjoyment of school'[1]	0.16* Med Low gp	0.14* Med Low gp				
'Academic self-image'[1]	0.33*	0.49*	0.56*			
'Behavioural self-image'[1]	0.15*			0.64*	-1.03*	-0.47
'Teachers' support for pupils' learning'[1]				0.23*		
'Headteacher qualities'[1]						
'Positive Social Environment'[1]					-0.26* Low Med gp	-0.15* Low Med gp
Reference group: Low Effect sizes (ES) represent differences between the lowest and highest scoring groups unless stated otherwise.						

*p<0.05 [1] Results presented are from final models showing only significant factors when all six *perception factors* are entered together.

Section 5: The Predictive Impact of Pupils' Self-Perceptions measured at an earlier age (Year 2) on Children's Progress from Year 1 to Year 5

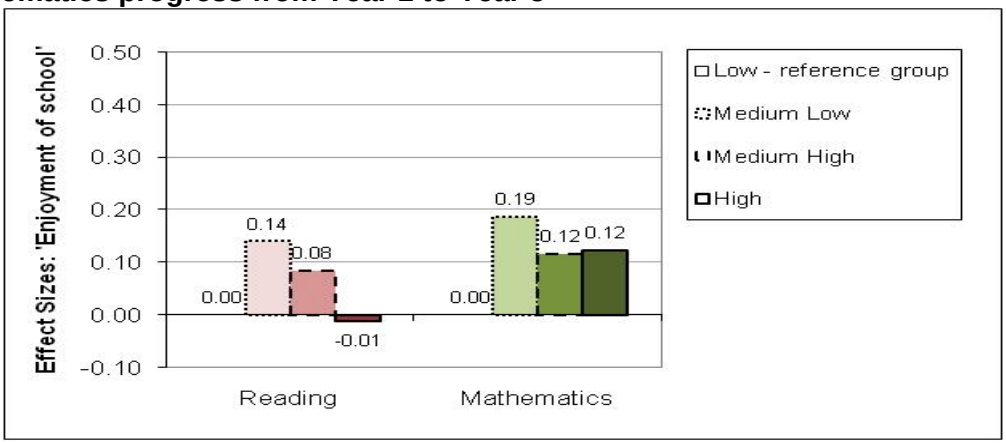
This section describes the results of multilevel analyses explaining the impact of pupils' self-perceptions measured at an earlier age (Year 2 in primary school) on children's progress from Year 1 to Year 5 for cognitive and social/behavioural outcomes. As noted in the introduction, pupils' self-perceptions were measured in Year 2 (age 7) as well as in Year 5 (age 10); however the items for each of the self-perception factors in Year 2 are somewhat different from the factors in Year 5 (for detailed comparison of factor items see Appendix 1).

The pupils' self-perception factors measured in Year 2 were entered individually as predictors into the contextualised multilevel model for each Year 5 outcome after controlling for significant background characteristics. The impact of pupils' self-perceptions measured in Year 2 on children's developmental progress between Year 1 and Year 5 was then tested using value added multilevel models, which include prior (Year 1) attainment and developmental level as additional predictors. For each set of analysis, each of the pupils' self-perception factors (measured in Year 2) was entered separately in the model. Following this, only the significant factors were tested together in the model. The results from the contextualised models and value added models were similar in terms of the effects of pupils' self-perceptions on cognitive and social/behavioural outcomes. Therefore to avoid repetition, we will report the results of value added models in this section only. The summary of significant results of contextualised models is presented in Appendix 6. In this section, results of value added models for each child outcome that included significant Year 2 pupils' self-perception factors are presented by the different self-perception factors measured in Year 2.

The effects of 'Enjoyment of school' measured at Year 2 on Children's Progress from Year 1 to Year 5

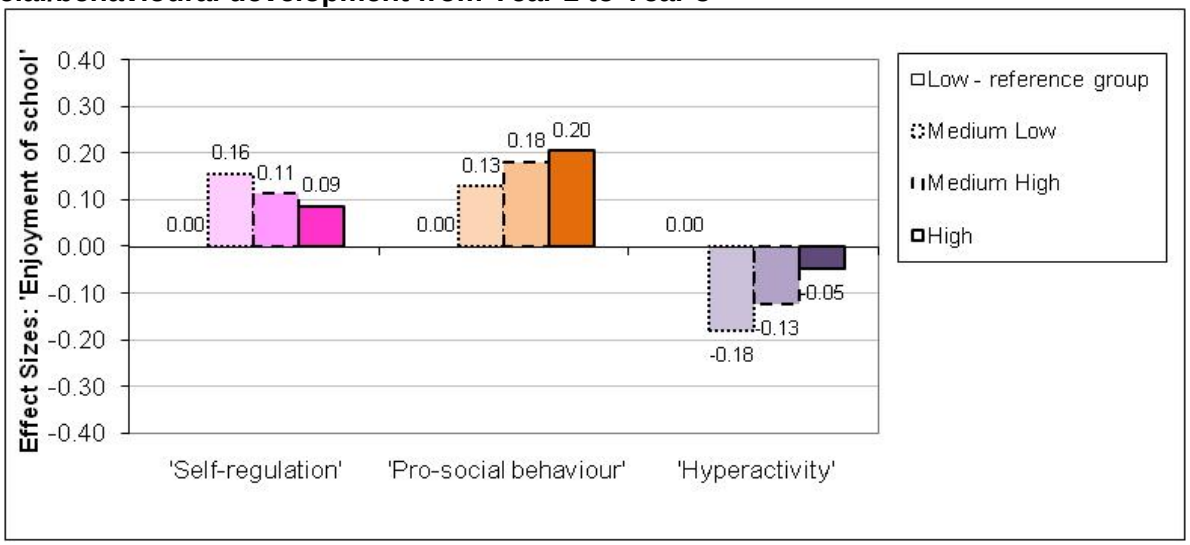
The Year 2 pupils' self-perception factor 'Enjoyment of school' had a small but significant effect on almost all children's cognitive progress and social/behavioural development, except for 'Anti-social' behaviour. As shown in Figure 5.1 and 5.2, children who reported medium levels of 'Enjoyment of school' showed better progress in Reading, greater improvement in 'Self-regulation' and more reduction in 'Hyperactivity' over time than children who either reported low or high levels of 'Enjoyment of school' in Year 2. However, the findings for Mathematics suggest that children who reported medium or high levels of 'Enjoyment of school' made better progress in Mathematics than children who reported low levels of 'Enjoyment of school' in Year 2 (Figure 5.1).

Figure 5.1: The effect of 'Enjoyment of school' measured at Year 2 on children's Reading and Mathematics progress from Year 1 to Year 5



A more linear relationship between 'Enjoyment of school' and children's outcomes was evident for 'Pro-social' behaviour; children with higher levels of 'Enjoyment of school' measured in Year 2 showed more improvement in 'Pro-social' behaviour (ES=0.20). The findings suggest that children who enjoyed going to and being in school the most in Year 2 did not necessarily make the best progress between Year 1 and Year 5 in terms of higher academic scores, better 'Self-regulation' or lower 'Hyperactivity' levels, but they did have better 'Pro-social' behaviour.

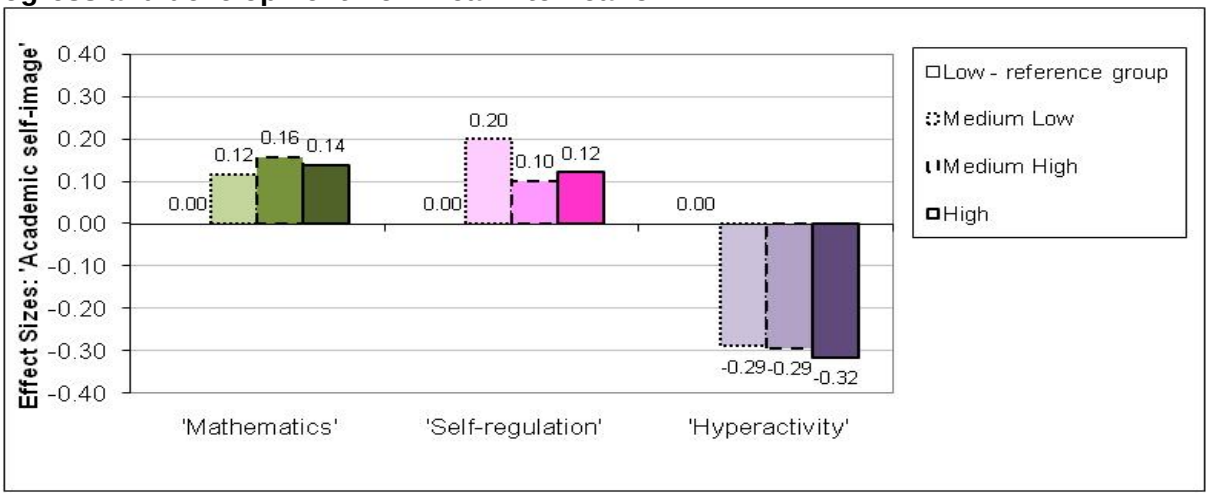
Figure 5.2: The effects of 'Enjoyment of school' measured at Year 2 on children's social/behavioural development from Year 1 to Year 5



The effects of 'Academic self-image' measured at Year 2 on Children's Progress from Year 1 to Year 5

As shown in Figure 5.3, 'Academic self-image' measured at Year 2 only had significant effects on children's progress for Mathematics, 'Self-regulation' and 'Hyperactivity'. Children who reported medium or high levels of 'Academic self-image' showed better progress in Mathematics and 'Self-regulation' and larger reductions in 'Hyperactivity' than children who reported low levels of 'Academic self-image' in Year 2. Interestingly, earlier 'Academic self-image' was not a significant predictor for progress in Reading over time and the effect on progress in Mathematics was much weaker (ES=0.14) than the effect of 'Academic self-image' measured in Year 5 (ES=0.46; see Section 2). This suggests that a current measure of 'Academic self-image' may be a better predictor of cognitive outcomes than an earlier one.

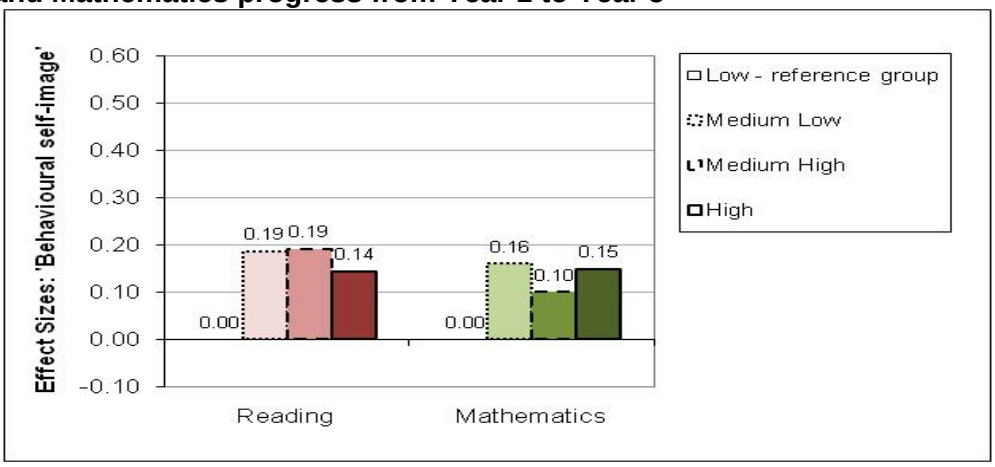
Figure 5.3: The effects of 'Academic self-image' measured at Year 2 on children's progress and development from Year 1 to Year 5



The effect of 'Behavioural self-image' measured at Year 2 on Children's Progress from Year 1 to Year 5

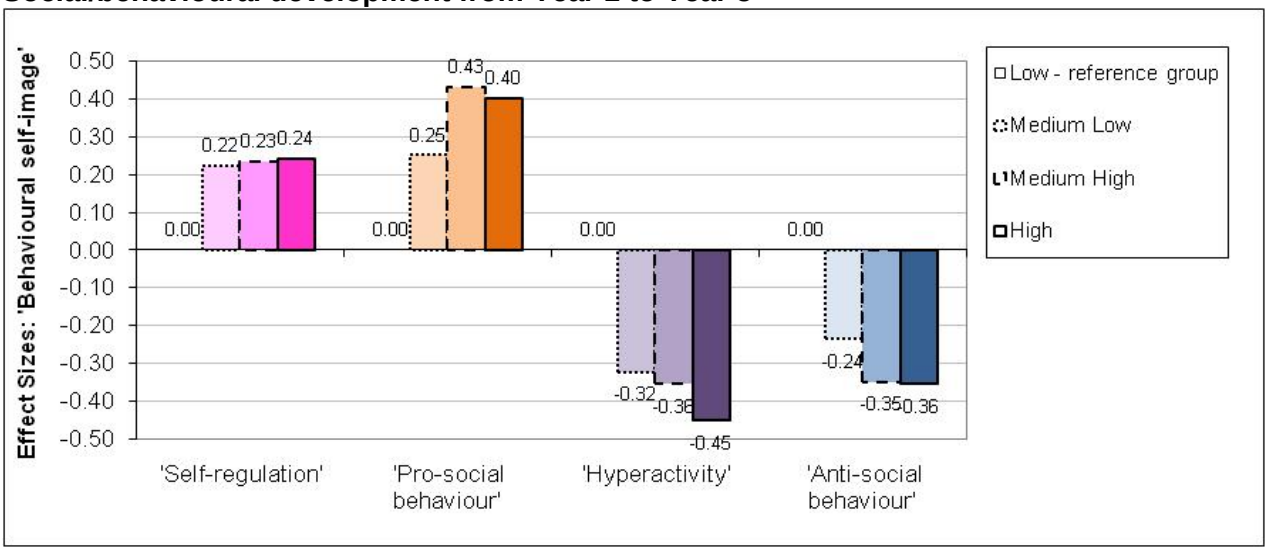
Earlier 'Behavioural self-image' measured at Year 2 had a significant effect on all children's cognitive progress and social-behavioural development in Year 5. As shown in Figures 5.4 and 5.5, children with medium and high levels of 'Behavioural self-image' measured in Year 2 made better progress in Reading, Mathematics and 'Self-regulation' between Year 1 and Year 5.

Figure 5.4: The effects of 'Behavioural self-image' measured at Year 2 on children's Reading and Mathematics progress from Year 1 to Year 5



A more linear relationship was evident between 'Behavioural self-image' at Year 2 and children's other social/behavioural outcomes at Year 5; children with higher levels of 'Behavioural self-image' measured in Year 2 showed more improvement in 'Pro-social' behaviour and larger reductions in 'Hyperactivity' and 'Anti-social' behaviour (Figure 5.5). The effects of earlier 'Behavioural self-image' are stronger for social/behavioural outcomes than for cognitive outcomes, which we expected since perceptions of pupils' own social behaviour are more likely to predict later social/behavioural outcomes than later cognitive outcomes. In addition, these findings are in line with the findings of relationships between 'Behavioural self-image' measured in Year 5 and children's progress form Year 1 to Year 5 reported in Section 2.

Figure 5.5: The effects of 'Behavioural self-image' measured at Year 2 on children's Social/behavioural development from Year 1 to Year 5



The predictive impact of all three pupils' self-perception factors measured at Year 2 on Children's Progress from Year 1 to Year 5

We will now summarise the results of findings when all three self-perception factors measured at Year 2 are tested together in the model for each outcome, controlling for background characteristics and prior attainment or developmental level. In these analyses we wanted to identify which set of the three pupils' self-perception factors had the strongest effect on a particular outcome.

Table 5.1 summarises the findings from value added multilevel analyses testing the predictive power of Year 2 pupils' self-perception factors in multilevel models of children's cognitive and social/behavioural outcomes. The findings suggest that relative to the other two self-perception factors, pupils' earlier 'Behavioural self-image' has the strongest predictive power and indicates that the children who had a more positive 'Behavioural self-image' in Year 2 made more all round improvements in social/behavioural development and greater progress in Reading between Year 1 and Year 5. In addition, the effect sizes for social/behavioural outcomes are higher than for cognitive outcomes, which one would expect since perceptions of pupils' own social behaviour are more likely to predict later social/behavioural outcomes than later cognitive outcomes. Interestingly, out of all three pupils' self-perception factors, only 'Enjoyment of school' was statistically significant in the final value added model for Mathematics. This suggests that 'Enjoyment of school' measured in Year 2 had a stronger impact on progress in Mathematics than other pupils' self-perception factors.

Table 5.1: Summary of relationships between Year 2 pupils' self-perceptions and children's cognitive and social/behavioural development outcomes

Year 2	Reading	Mathematics	'Self-regulation'	'Pro-social' behaviour	'Hyperactivity'	'Anti-social' behaviour
'Enjoyment of school'		0.19* Low Med gp				
'Academic self-image'					-0.23* Low Med gp	
'Behavioural self-image'	0.19* Med gps		0.24*	0.40*	-0.39*	-0.36*
Reference group: Low Effect sizes (ES) represent differences between the lowest and highest scoring groups unless stated otherwise.						

*p<0.05. Results presented are from final value added models showing only significant factors when all three pupils' self-perception factors are entered together.

Summary and Conclusions

Recent EPPE 3-11 reports on Reading and Mathematics attainment and social/behavioural outcomes (Sammons et al., 2007a; 2007b) focused on children's outcomes at the end of Year 5 (age 10) and children's academic and social/behavioural progress from the end of Year 1 (age 6) to the end of Year 5 (age 10) in primary school. This previous research explored the influence of a wide variety of child, parent, and family factors as predictors of these outcomes, including aspects of the Early years HLE and aspects of the later HLE during Key Stage 1 of primary school.

The goal of this report was to extend these models to explore the effect of pupils' self-perceptions and their views of primary school on their cognitive and social/behavioural outcomes at Year 5 (age 10). The research has built on the earlier analyses (Sammons, 2007a; 2007b) by investigating relationships between children's Year 5 outcomes and aspects of pupils' self-perceptions and their views of primary school measured in Year 5 as well as aspects of pupils' self-perceptions at an earlier age in Year 2 of primary school, controlling for important background characteristics. These measures of pupils' self-perceptions and views of primary school were derived from self-report questionnaires completed by EPPE 3-11 pupils. The analyses also explored patterns of association between pupils' self-perceptions and views of primary school and progress and social/behavioural development over time.

The effect of Year 5 pupils' self-perceptions

Overall, in Year 5 pupils' self-perceptions (particularly 'Academic self-image' and 'Behavioural self-image') were stronger predictors of their social/behavioural and educational outcomes at age 10 than pupils' views of their primary school. The findings were similar for both attainment and progress up to Year 5.

As hypothesised, the findings demonstrate a stronger association between pupils' views of themselves and their educational outcomes, than an association between pupils' views of their primary school and their outcomes. All pupils' self-perception factors were related to pupil outcomes, suggesting that having higher 'Academic self-image' and/or 'Behavioural self-image' is associated with higher cognitive attainment and better social/behavioural outcomes, as well as positive progress on these outcomes from Year 1 to Year 5. The factor 'Enjoyment of school' was positively related to social/behavioural outcomes, suggesting that children who enjoyed going to school and were interested in classes had higher levels of 'Pro-social' behaviour and 'Self-regulation', but also lower levels of 'Hyperactivity' and 'Anti-social' behaviour.

However, there was a different relationship between 'Enjoyment of school' and cognitive outcomes; medium levels of 'Enjoyment of school' were linked with higher Reading and Mathematics scores than either high or low levels of 'Enjoyment of school'. This finding suggests that children who enjoyed going to and being in school the most did not necessarily have the highest cognitive scores. The interaction between 'Academic self-image' and 'Enjoyment of school' showed that low levels of 'Academic self-image' were related to the lowest Reading and Mathematics attainment scores in Year 5 regardless of the level of 'Enjoyment of school'. However, for higher levels of 'Academic self-image', the 'Enjoyment of school' did matter: medium levels of 'Enjoyment of school' were related to the highest Reading and Mathematics attainment scores in Year 5. This finding suggests that children who have higher levels of 'Academic self-image' and either do not enjoy school or enjoy school very much, have similar cognitive attainment scores. However, their cognitive attainment is lower compared with children who have medium levels of 'Enjoyment of school' and similar levels of 'Academic self-image'.

Pupils' 'Academic self-image' was the strongest predictor of cognitive outcomes and 'Self-regulation', whereas pupils' 'Behavioural self-image' was the strongest predictor of the other social/behavioural outcomes. These findings are in line with other research on pupils' self-

concept (Marsh, 2006) and suggest that a pupil's views of his or her own academic abilities are more likely to be related to his or her performance on Reading and Mathematics tests, as well as teacher's ratings of the pupil's social behaviour in terms of 'Self-regulation'. Similarly, a pupil's own views of his or her behaviour are likely to be related to teacher's ratings of 'Pro-social' behaviour, 'Hyperactivity' and 'Anti-social' behaviour (similar findings in Haynes, 1990). However, it is important to note that it is not possible to conclude that there is a causal effect of pupils' self-perceptions on their cognitive and social/behavioural outcomes in Year 5. The findings only show that the relationship between 'Academic self-image' and cognitive outcomes is strong, which was expected since previous studies have consistently shown a strong *reciprocal* relationship between academic self-concept and academic achievement (Marsh, 1994; 2006; Marsh and Yeung, 1997). Therefore, children's levels of academic self-concept and their academic achievement interact at different ages. Similarly, there might be a reciprocal relationship between 'Behavioural self-image' and social/behavioural outcomes (Sammons et al., 2008a).

The effect of Year 5 pupils' views of primary school

Even though pupils' views of primary school were somewhat weaker predictors of their social/behavioural and cognitive outcomes than pupils' self-perception factors, they still showed statistically significant impact on the outcome measures. Of the three factors tested, only perceived 'Positive Social Environment' was related to all pupil outcomes. This suggests that when a pupil feels safe and peers are viewed as friendly, both educational and social/behavioural outcomes benefit. Pupils' perceptions of 'Teachers' support for pupils' learning' were positively related to 'Self-regulation' and 'Pro-social' behaviour. Pupils attending a school where they perceive they get support for learning from their teachers predicts better 'Self-regulation' and 'Pro-social' behaviour for the pupils. In addition, the factor 'Headteacher qualities' was related to 'Pro-social' behaviour and 'Hyperactivity', and to Reading attainment in Year 5. The findings suggest that when a pupil perceives that the Headteacher is interested in pupils and is making sure that they behave, pupils have better 'Pro-social' behaviour, lower levels of 'Hyperactivity', and better Reading scores in Year 5 (age 10). Overall, the results of pupils' views of their primary school broadly support the notion that in safe and supportive schools there were measurable benefits in terms of pupils' all round development.

The predictive impact of Year 2 pupils' self-perceptions

Findings from multilevel analyses showed that pupils' 'Behavioural self-image' is an important predictor and indicate that pupils who had higher 'Behavioural self-image' in Year 2 (age 7) had all round better social/behavioural development and higher cognitive attainment and made better progress by Year 5 (age 10). In addition, the associations of 'Behavioural self-image' with social/behavioural outcomes are higher than for cognitive outcomes, which we expected since perceptions of pupils' own social behaviour are more likely to predict later social/behavioural outcomes than later cognitive outcomes. The factors 'Enjoyment of school' and 'Academic self-image' did not show strong relationships with the outcomes after controlling for other influences. Nevertheless, they were significant when used separately from other pupils' self-perception factors. In general, higher levels of 'Academic self-image' were related to higher Mathematics scores, better 'Self-regulation' and 'Pro-social' behaviour, and lower 'Hyperactivity'. Medium and high levels of 'Enjoyment of school' were related to higher Mathematics scores, and better 'Self-regulation' and 'Pro-social' behaviour, whereas medium levels of 'Enjoyment of school' were related to higher Reading scores and lower 'Hyperactivity'. The findings were broadly similar to the results of Year 5 pupils' perceptions even though there are some apparent differences, particularly in the effect of 'Academic self-image'.[6]

[6] However, caution should be used when comparing the results of the impact of Year 2 pupils' self-perceptions and Year 5 pupils' self-perceptions, since the items that form the self-perception factors are not the same in both years. Therefore, it is not possible to separate what might be the impact of a different time point from the impact of a slightly different measure.

Taken together the findings from the current research provide confirmation that there are significant variations in the perceived quality of primary school and processes in Year 5 (age 10) and that such variations are related to progress in pupils' cognitive and social/behavioural outcomes. The results indicate that more supportive schools tend to foster both better cognitive and better social/behavioural outcomes. In addition, consistent with the literature, pupils' views of their own behaviour and self-image are related to overall outcomes and tend to be stronger predictors of pupils' outcomes than their views of their primary school. Overall, the findings indicate that features of teacher's practice and the school social environment play a part in shaping pupils' progress, in addition to their own personal, family and home learning environment (HLE) characteristics.

References

Goodman, R. (1997), 'The Strengths & Difficulties Questionnaire: A Research Note'. *Journal of Child Psychology & Psychiatry, 38,* 581-586.

Haynes, N. M. (1990). Influence of Self-concept on School Adjustment among Middle-School Students. *The Journal of Social Psychology, 130(2)*, 199-207.

Marsh, H. W. (1994). Using the National Educational Longitudinal Study of 1988 to evaluate theoretical models of self-concept: The Self-Description Questionnaire. *Journal of educational Psychology, 86,* 439-456.

Marsh, H. W. (2006). *Self-concept theory, measurement and research into practice: The role of self-concept in educational psychology*. Leicester: The British Psychological Society.

Marsh, H. W. & Yeung, A. S. (1997). Causal Effects of Academic Self-concept on Academic Achievement: Structural Equation Models of Longitudinal Data. *Journal of Educational Psychology, 89(1)*, 41-54.

Melhuish, E., Romaniuk, H., Sammons, P., Sylva, K., Siraj-Blatchford, I. and Taggart, B. (2006), *Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11): The Effectiveness of Primary Schools in England in Key Stage 2 for 2002, 2003 and 2004. Full Report*. London: Institute of Education, University of London. http://www.ioe.ac.uk/schools/ecpe/eppe/eppe3-11/eppe3-11pubs.htm

Melhuish, E., Sylva, K., Sammons, P., Siraj-Blatchford, I., Taggart, B. and Phan, M. (2008), 'Effects of the Home Learning Environment and preschool center experience upon literacy and numeracy development in early primary school'. *Journal of Social Issues,* 64*,* 157-188.

Sammons, P., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I., Taggart, B. and Elliot, K. (2002), *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 8a - Measuring the Impact of Pre-School on Children's Cognitive Progress over the Pre-School Period*. London: DfES / Institute of Education, University of London.

Sammons, P., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I., Taggart, B. and Elliot, K. (2003), *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 8b - Measuring the Impact of Pre-School on Children's Social/Behavioural Development over the Pre-School Period*. London: DfES / Institute of Education, University of London.

Sammons, P., Sylva, K., Melhuish, E. C., Siraj-Blatchford, I., Taggart, B. and Grabbe, Y. (2007a). *Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11): Influences on Children's Attainment and Progress in Key Stage 2: Cognitive Outcomes in Year 5. Full Report.* London: Institute of Education, University of London.
http://www.ioe.ac.uk/schools/ecpe/eppe/eppe3-11/eppe3-11pubs.htm

Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B. and Barreau, S. (2007b), *Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11): Influences on Children's Development and Progress in Key Stage 2: Social/behavioural Outcomes in Year 5. Research Report no. DCSF-RR007*. Nottingham: DfES Publications

Sammons, P., Sylva, K., Siraj-Blatchford, I., Taggart, B., Smees, R. and Melhuish, E. (2008a), *Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11) Influences on pupils' self-perceptions in primary school: Enjoyment of school, Anxiety and Isolation, and Self-image in Year 5*. London: Institute of Education, University of London.

Sammons, P., Sylva, K., Siraj-Blatchford, I., Taggart, B., Smees, R. and Melhuish, E. (2008b), *Effective Pre-school and Primary Education 3-11 Project (EPPE 3-11): Exploring pupils' views of primary school in Year 5*. London: Institute of Education, University of London.

Sylva, K., Sammons, P., Melhuish, E. C., Siraj-Blatchford, I. and Taggart, B. (1999), *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 1 - An Introduction to The Effective Provision of Pre-School Education (EPPE) Project*. London: DfEE / Institute of Education, University of London.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2004), *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 12 - The final report*. London: DfES / Institute of Education, University of London.

Appendix 1: Description of factors for the Year 5 and Year 2 self-reported children's questionnaires

Questionnaires were designed to explore pupils' self-perceptions and their views of their primary school. These self-report measures were collected in Year 2 and again in Year 5. A range of statistical methods (i.e., exploratory and confirmatory factor analysis) have been used to investigate results for 2553 children for whom at least one self-reported measure was collected in Year 5, representing 80.5 per cent of the children for whom valid baseline data had been collected on self-reported measures in Year 2 (Sammons et al., 2008a; 2008b). The statistical analyses of the Year 5 questionnaire items were conducted in a similar way to that in Year 2 and in both cases identified a number of underlying dimensions (factors), which reflect patterns of associations amongst the questionnaire items. The factors were revealed by combined principal components analysis and confirmatory factor analysis (Sammons et al., 2008a; 2008b).

For this report, three factors measuring aspects of pupils' self-perceptions were used: 'Enjoyment of school', 'Academic self-image', and 'Behavioural self-image'. An additional three factors measuring aspects of pupils' views of primary school were also used in this report: 'Teachers' support for pupils' learning', 'Headteacher qualities', and 'Positive Social Environment'. The aspects of pupils' self-perceptions were collected in both Year 5 and Year 2, whereas aspects of pupils' views about their primary school were only collected in Year 5. The specific questionnaire items found to be associated with each aspect of pupils' perceptions and pupils' views of primary school in Year 5 are presented in Box A.1.1. Aspects of pupils' self-perceptions in Year 2 are presented in Box A.1.2. Correlations between Year 2 and Year 5 scores in self-perceptions are presented in Table A.1.1.

Box A.1.1: The specific items associated with each self-reported measure in Year 5 (age 10)

Pupils' self-perceptions	Pupils' views of primary school
'Enjoyment of school' (α=0.76) 1. Lessons are interesting 2. I like going to school 3. I get fed up at school 4. I get tired at school 5. I like English 6. I like Maths 7. I like Science	**'Teachers' support for pupils' learning'** (α=0.68) 1. I am told by my teacher I can do well 2. If I do well get praised 3. If I don't understand my work someone will explain it to me 4. I am told how I am getting on with my work by my teacher 5. I am helped to do my best
'Academic self-image' (α=0.74) 1. I am clever 2. I know how to cope with my school work 3. I am good at school work 4. My teacher thinks I'm clever	**'Headteacher qualities'** (α=0.68) 1. The head is interested in the children 2. The head makes sure children behave well 3. The head is really interested in how much we learn at school
'Behaviour self-image' (α=0.62) 1. I try to do my best at school 2. I behave in class 3. I talk to my friends when I should be doing my work 4. I hit other children	**'Positive Social Environment'** (α=0.69) 1. The children in this school are really friendly 2. There is not much bullying or name calling at this school 3. I feel safe at lesson times 4. I feel safe at school during break and lunch times

Box A.1.2: The specific items associated with each self-reported measure in Year 2 (age 7)

Pupils' self-perceptions

'Enjoyment of school' (α=0.69)
1. I like school
2. I like answering questions in class
3. I like reading
4. I like doing number work
5. I like Science
6. School is interesting

'Behaviour self-image' (α=0.62)
1. I try to do my best at school
2. I behave well in class
3. I am kind to other children

'Academic self-image' (α=0.57)
1. I am clever
2. My teacher thinks I'm clever
3. I do my work properly

Table A.1.1: Correlations between Year 2 and Year 5 self-perceptions measures

	'Enjoyment of school' Year 2	'Academic self-image' Year 2	'Behaviour self-image' Year 2
'Enjoyment of school' Year 5	**0.198*** N=2160**	0.132*** N=2160	0.058*** N=2160
'Academic self image' Year 5	0.058*** N=2151	**0.161*** N=2151**	0.090*** N=2151
'Behaviour self-image' Year 5	0.089*** N=2160	0.151*** N=2160	**0.278*** N=2160**

*** p<0.001

Pupils' self-perception factors and their views of primary school factors were first tested as continuous variables in the models. However, in order to detect curvilinear relationships with the outcome variables, we decided to categorize variables in four groups. For multilevel analyses, all factors, except 'Headteacher qualities', were categorised into 4 categories: Low (below -1 SD), Medium Low (between -1 SD and the Mean), Medium High (between the Mean and +1 SD), and High (above +1SD). 'Headteacher qualities' was categorised into 3 groups only (Low, Medium, and High), because the 'High' group includes almost half of the sample used in the analyses (there are 1131 children with the same score). Table A.1.2 indicates sample size per group for each Year 5 factor for Reading, Mathematics, and social/behavioural outcomes, and Table A.1.3 indicates frequencies of groupings for Year 2 factors.

Table A.1.2: Number of cases for each Year 5 factor for different Year 5 pupil outcomes

Year 5	Year 5	Reading (N=2,549)	Mathematics (N=2,532)	Social/behavioural outcomes (N=2,520)
'Enjoyment of school'	Low	402	399	383
	Medium Low	852	849	843
	Medium High	862	854	845
	High	399	395	388
	Missing	34	25	61
'Academic self-image'	Low	423	419	409
	Medium Low	657	653	643
	Medium High	1030	1025	1006
	High	392	387	388
	Missing	47	48	74
'Behavioural self-image'	Low	406	406	394
	Medium Low	842	829	824
	Medium High	680	678	668
	High	587	584	573
	Missing	34	35	61
'Teachers' support for pupils' learning'	Low	404	401	390
	Medium Low	845	839	827
	Medium High	856	849	840
	High	400	399	394
	Missing	40	40	65
'Headteacher qualities'	Low	449	446	436
	Medium	929	924	909
	High	1131	1122	1110
	Missing	40	40	65
'Positive Social Environment'	Low	395	392	384
	Medium Low	923	915	897
	Medium High	790	784	776
	High	401	401	398
	Missing	40	40	65

Table A.1.3: Number of cases for each Year 2 factor for different Year 5 pupil outcomes

Year 2	Year 5	Reading (N=2,549)	Mathematics (N=2,532)	Social/behavioural outcomes (N=2,520)
'Enjoyment of school'	Low	344	340	343
	Medium Low	721	717	714
	Medium High	764	761	758
	High	343	342	333
	Missing	377	372	372
'Academic self-image'	Low	349	350	351
	Medium Low	702	695	688
	Medium High	709	703	694
	High	412	412	415
	Missing	377	372	372
'Behavioural self-image'	Low	318	316	313
	Medium Low	615	609	609
	Medium High	516	511	514
	High	723	724	712
	Missing	377	372	372

Appendix 2: Description of measures used for original contextualised models

Background information

Background information about child, parent and family characteristics, was obtained through parent interviews conducted soon after children were recruited to the study. The parent interviews were designed to obtain information about a child's health and care history, details of family structure and parents' own educational and occupational backgrounds as well as some indications of parent-child activities and routines. Parents were assured of confidentiality and anonymity in presenting results. It should be noted, that most interviews were with children's mothers and usually took place at the child's pre-school centre, although for some working parents telephone interviews were found to be more convenient. All parents gave signed informed consent. An excellent response rate (97%) for the interview was achieved, although in some instances particular questions had a slightly lower rate of response (e.g. related to occupations).

Background information was again collected during Key Stage 1 (KS1) using a questionnaire with a response rate of eighty-one per cent. Information obtained by the parent questionnaire was used to update various background measures such as marital status, number of siblings, employment etc. In addition, the parents' questionnaire was used to collect additional measures of the home learning environment (HLE) in Key Stage 1 when children were age 6, to complement information on the Early years HLE, such as home computing and other activities (including Reading, play of various kinds, involvement in sport, music, dance etc.).

Cognitive measures

Cognitive measures, Reading and Mathematics attainment, used in this report were collected at Year 1 and Year 5 in primary school, when teachers administered NFER-Nelson assessments. The NFER-Nelson assessments provide a manual to transform raw test scores into age standardised scores. However, for the EPPE 3-11 sample (which is not UK representative but relatively underachieving due to slightly higher numbers of disadvantaged children in the sample) the manual standardisation procedure does not account for variation especially found in younger age and under average achieving groups. Therefore it was decided to apply a complex internal age standardisation and normalisation procedure to the cognitive outcomes in Year 1 and Year 5. This resulted in approximately normally distributed outcomes which do not show a correlation with age.

Social behavioural measurers

An extended version of the Strengths and Difficulties Questionnaire (Goodman, 1997) was used to measure different features of children's social/behavioural development in Year 5. This social/behavioural child profile was completed by a class teacher who knew the child well. A principal component analysis was used to identify the main underlying dimensions of social behaviour. In this report we focus on four aspects of social behaviour – 'Hyperactivity', 'Self-regulation', 'Pro-social' behaviour and 'Anti-social' behaviour. The specific questionnaire items found to be associated with each of the four social/behavioural dimensions are presented in Box A.2.1.

Box A.2.1: The specific items associated with each social/behavioural dimension in Year 5 (age 10)

'Hyperactivity'

1. Restless, overactive, cannot stay still for long
2. Constantly fidgeting or squirming
3. Easily distracted, concentration wanders
4. Thinks things out before acting
5. Sees tasks through to the end, good attention span
6. Quickly loses interest in what she/he is doing
7. Gets over excited
8. Easily frustrated
9. Impulsive, acts without thinking
10. Can behave appropriately during less structured sessions
11. Fails to pay attention
12. Makes careless mistakes

'Self-regulation'

1. Likes to work things out for self; seeks help rarely
2. Does not need much help with tasks
3. Chooses activities on their own
4. Persists in the face of difficult tasks
5. Can move on to a new activity after finishing a task
6. Open and direct about what she/he wants
7. Confident with others
8. Shows leadership in group work
9. Can take responsibility for a task

'Anti-social' behaviour

1. Often fights with other children or bullies him
2. Often lies or cheats
3. Steals from home, school or elsewhere
4. Vandalises property or destroys things
5. Shows inappropriate sexual behaviour toward others
6. Has been in trouble with the law

'Pro-social' behaviour

1. Considerate of other people's feelings
2. Shares readily with other children (treats, toys, etc.)
3. Helpful if someone is hurt, upset or feeling ill
4. Kind to younger children
5. Often volunteers to help others (teachers, other children)
6. Offers to help others having difficulties with a task
7. Sympathetic to others if they are upset
8. Apologises spontaneously

The factor scores from the principal component analysis were used in subsequent analyses. Higher scores indicate better behaviour for the factors 'Self-regulation' and 'Pro-social' behaviour. By contrast, for 'Hyperactivity' and 'Anti-social' behaviour' lower scores indicate better behaviour (in terms of lower incidence reported by teacher ratings). Note that scores on all social/behavioural measures are skewed towards the more desirable end of the scale. This is especially important for the more negative aspects of social behaviour where raised scores indicating potential maladaptive behaviour (using the cut-off point suggested by Goodman, 1997) are only evident for a small minority of children (6.1%). This shows that most children are rated positively by their teachers in terms of these features of social behaviour and the results are in line with other research on social behaviour and with the distribution of scores for social/behavioural measures for the EPPE 3-11 sample at younger ages.

Reconstructed original contextualised models

Tables A.2.1 and A.2.2 show the results of the reconstructed contextualised models, for Reading and Mathematics in Year 5, that were used as starting (i.e., baseline) models for analyses in this paper. Tables A.2.3, A.2.4, A.2.5, and A.2.6 show the results of reconstructed contextualised models of 'Self-regulation', 'Pro-social' behaviour, 'Hyperactivity' and 'Anti-social' behaviour in Year 5.

Table A.2.1: The results of reconstructed original contextualised models of Reading in Year 5

Reading		Estimate	SE	Effect Size
Fixed Effects	Intercept	95.964*	2.011	
Age		0.013	0.071	**0.00**
Gender (compared to boys)		1.342*	0.525	**0.11**
Birth weight (compared to normal weight)	Missing data	0.150	1.996	**0.01**
	Very Low (=< 1500g)	-5.075*	2.277	**-0.40**
	Low (1501 – 2500g)	0.450	1.035	**0.04**
Ethnic groups	White European Heritage	-4.724*	1.510	**-0.37**
(compared to White UK Heritage)	Black Caribbean Heritage	-0.592	1.384	**-0.05**
	Black African Heritage	-2.312	1.895	**-0.18**
	Any other Ethnic Minority Heritage	-1.969	1.785	**-0.16**
	Indian Heritage	0.621	1.886	**0.05**
	Pakistani Heritage	-2.951*	1.401	**-0.23**
	Bangladeshi Heritage	-4.557	2.521	**-0.36**
	Mixed Heritage	-1.092	1.139	**-0.09**
Number of siblings (compared to no siblings)	1-2 siblings	-0.684	0.747	**-0.05**
	3 + siblings	-2.522*	1.011	**-0.20**
	Missing data	-1.483	4.928	**-0.12**
Need of EAL support (compared to none)	Missing data	-0.870	0.837	**-0.07**
	EAL support needed	-4.784*	1.480	**-0.38**
Developmental Problems (compared to none)	Missing data	6.409	5.287	**0.51**
	1 Developmental Problem	-2.170*	0.830	**-0.17**
	2+ Developmental Problems	-5.332*	2.517	**-0.42**
FSM (compared to none)		-3.528*	0.775	**-0.28**
Mother's qualifications (compared to none)	Missing data	0.202	2.244	**0.02**
	Vocational	1.188	0.986	**0.09**
	Academic age 16	2.713*	0.818	**0.21**
	Academic age 18	4.179*	1.199	**0.33**
	Degree or equivalent	8.039*	1.234	**0.63**
	Higher degree	9.737*	1.783	**0.77**
	Other professional / Miscellaneous	4.931*	2.252	**0.39**
Father's qualifications (compared to none)	Missing data	-5.386	4.814	**-0.42**
	Vocational	1.507	1.056	**0.12**
	Academic age 16	0.350	0.911	**0.03**
	Academic age 18	1.385	1.243	**0.11**
	Degree or equivalent	4.014*	1.212	**0.32**
	Higher degree	3.548*	1.709	**0.28**
	Other professional / Miscellaneous	-0.116	2.767	**-0.01**
	Missing (Absent Father)	0.782	0.885	**0.06**
Family SES	Other professional non-manual	-1.556	1.023	**-0.12**
(compared to professional non-manual)	Skilled non-manual	-2.902*	1.191	**-0.23**
	Skilled manual	-4.218*	1.243	**-0.33**
	Semi-skilled manual	-4.446*	1.498	**-0.35**
	Unskilled manual	-4.867*	2.327	**-0.38**
	Unemployed / Never Worked	-3.180*	1.600	**-0.25**
	Missing data	-2.912	4.247	**-0.23**
Family Salary (compared to 'no salary')	Missing data	0.275	1.206	**0.02**
	£2,500 – 17,499	-0.104	1.215	**-0.01**
	£17,500 – 29,499	1.664	1.269	**0.13**
	£30,000 – 37,499	0.564	1.385	**0.04**
	£37,500 – 67,499	2.570*	1.339	**0.20**
	£67,500 – 132,00+	3.397*	1.692	**0.27**
Early Years HLE (compared to 0-13)	Missing data	-0.268	2.020	**-0.02**
	14-19	1.629	1.044	**0.13**
	20-24	3.207*	1.057	**0.25**
	25-32	5.057*	1.052	**0.40**
	33-45	7.289*	1.256	**0.58**
Random Effects	**School variance**	2.972	2.648	
	Residual variance	160.697	5.139	
-2LL		-10019.47		

*p<0.05

Table A.2.2: The results of reconstructed original contextualised models of Mathematics in Year 5

Mathematics		Estimate	SE	Effect Size
Fixed Effects	Intercept	94.780*	1.957	
Age		0.050	0.073	**0.00**
Birth weight (compared to normal weight)	Missing data	2.356	2.041	**0.19**
	Very Low (=< 1500g)	-5.472*	2.326	**-0.43**
	Low (1501 – 2500g)	-1.461	1.072	**-0.12**
Ethnic groups	White European Heritage	-2.500	1.563	**-0.20**
(compared to White UK Heritage)	Black Caribbean Heritage	1.351	1.467	**0.11**
	Black African Heritage	-2.458	1.971	**-0.19**
	Any other Ethnic Minority Heritage	1.036	1.869	**0.08**
	Indian Heritage	4.931*	2.024	**0.39**
	Pakistani Heritage	-0.424	1.558	**-0.03**
	Bangladeshi Heritage	-1.352	2.622	**-0.11**
	Mixed Heritage	-0.841	1.186	**-0.07**
Need of EAL support (compared to none)	Missing data	-2.388*	0.885	**-0.19**
	EAL support needed	-6.470*	1.529	**-0.51**
Health Problems (compared to none)	Missing data	7.536	5.426	**0.60**
	1 Health Problem	-0.370	0.619	**-0.03**
	2 Health Problems	0.225	1.058	**0.02**
	3+ Health Problems	-5.339*	2.302	**-0.42**
FSM (compared to none)		-2.806*	0.798	**-0.22**
Mother's qualifications (compared to none)	Missing data	-0.309	2.298	**-0.02**
	Vocational	0.493	1.010	**0.04**
	Academic age 16	2.551*	0.838	**0.20**
	Academic age 18	4.798*	1.233	**0.38**
	Degree or equivalent	6.996*	1.274	**0.55**
	Higher degree	6.969*	1.838	**0.55**
	Other professional / Miscellaneous	6.574*	2.296	**0.52**
Father's qualifications (compared to none)	Missing data	-8.769	4.868	**-0.69**
	Vocational	2.493*	1.084	**0.20**
	Academic age 16	1.465	0.935	**0.12**
	Academic age 18	0.796	1.279	**0.06**
	Degree or equivalent	4.284*	1.245	**0.34**
	Higher degree	4.730*	1.763	**0.37**
	Other professional / Miscellaneous	1.080	2.820	**0.09**
	Missing (Absent Father)	0.711	0.906	**0.06**
Family SES	Other professional non-manual	-1.910	1.054	**-0.15**
(compared to professional non-manual)	Skilled non-manual	-3.455*	1.225	**-0.27**
	Skilled manual	-3.693*	1.279	**-0.29**
	Semi-skilled manual	-3.978*	1.542	**-0.32**
	Unskilled manual	-3.924	2.390	**-0.31**
	Unemployed / Never Worked	-2.116	1.644	**-0.17**
	Missing data	-2.642	3.287	**-0.21**
Family Salary (compared to 'no salary')	Missing data	1.602	1.248	**0.13**
	£2,500 – 17,499	0.874	1.250	**0.07**
	£17,500 – 29,499	2.802*	1.308	**0.22**
	£30,000 – 37,499	2.697	1.426	**0.21**
	£37,500 – 67,499	4.072*	1.382	**0.32**
	£67,500 – 132,00+	4.249*	1.750	**0.34**
Early Years HLE (compared to 0-13)	Missing data	1.184	2.068	**0.09**
	14-19	2.237*	1.073	**0.18**
	20-24	2.142*	1.079	**0.17**
	25-32	4.346*	1.075	**0.34**
	33-45	6.082*	1.264	**0.48**
Random Effects	**School variance**	17.043	4.164	
	Residual variance	159.240	5.363	
-2LL		-10003.52		

*p<0.05

Table A.2.3: The results of reconstructed original contextualised models of 'Self-regulation' in Year 5

'Self-regulation'		Estimate	SE	Effect Size
Fixed Effects	Intercept	-0.523*	0.095	
Age		0.034*	0.005	**0.04**
Gender (compared to boys)		0.190*	0.039	**0.21**
Birth weight (compared to normal weight)	Missing data	-0.035	0.151	**-0.04**
	Very Low (=< 1500g)	-0.171	0.171	**-0.19**
	Low (1501 – 2500g)	-0.206*	0.077	**-0.22**
Behavioural Problems (compared to none)	1 Behavioural Problem	-0.230*	0.062	**-0.25**
	2+ Behavioural Problems	-0.139	0.188	**-0.15**
Need of EAL support (compared to none)	Missing data	-0.244*	0.069	**-0.26**
	EAL support needed	-0.498*	0.109	**-0.54**
FSM (compared to none)	Missing data	0.247	0.276	**0.27**
	Eligible for FSM	-0.127*	0.058	**-0.14**
Mother's qualifications (compared to none)	Missing data	0.055	0.167	**0.06**
	Vocational	0.006	0.072	**0.01**
	Academic age 16	0.035	0.060	**0.04**
	Academic age 18	0.053	0.088	**0.06**
	Degree or Higher Degree	0.204*	0.086	**0.22**
	Other professional / Miscellaneous	0.218	0.217	**0.24**
Father's qualifications (compared to none)	Vocational	0.112	0.078	**0.12**
	Academic age 16	0.158*	0.067	**0.17**
	Academic age 18	0.193*	0.090	**0.21**
	Degree or equivalent	0.310*	0.087	**0.34**
	Higher degree	0.232*	0.115	**0.25**
	Other professional / Miscellaneous	0.064	0.205	**0.07**
	Missing (Absent Father)	0.211*	0.065	**0.23**
Family Salary (compared to 'no salary')	Missing data	0.035	0.068	**0.04**
	£2,500 – 17,499	0.075	0.067	**0.08**
	£17,500 – 29,499	0.204*	0.072	**0.22**
	£30,000 – 37,499	0.228*	0.083	**0.25**
	£37,500 – 67,499	0.214*	0.076	**0.23**
	£67,500 – 132,00+	0.229*	0.103	**0.25**
Early Years HLE (compared to 0-13)	Missing data	0.181	0.152	**0.20**
	14-19	0.151*	0.077	**0.16**
	20-24	0.155*	0.078	**0.17**
	25-32	0.236*	0.077	**0.26**
	33-45	0.418*	0.091	**0.45**
Random Effects	**School variance**	0.027	0.014	
	Residual variance	0.851	0.027	
-2LL		-3303.81		

*p<0.05

Table A.2.4: The results of reconstructed original contextualised models of 'Pro-social' behaviour in Year 5

'Pro-social' behaviour		Estimate	SE	Effect size
Fixed Effects	Intercept	-0.484*	0.096	
Age		0.012*	0.005	**0.01**
Gender (compared to boys)		0.538*	0.039	**0.62**
Behavioural Problems (compared to none)	1 Behavioural Problem	-0.186*	0.065	**-0.22**
	2+ Behavioural Problems	-0.192	0.129	**-0.22**
FSM (compared to none)	Missing data	0.230	0.276	**0.27**
	Eligible for FSM	-0.137*	0.057	**-0.16**
Mother's qualifications (compared to none)	Missing data	0.054	0.158	**0.06**
	Vocational	-0.016	0.068	**-0.02**
	Academic age 16	0.167*	0.056	**0.19**
	Academic age 18	0.131	0.082	**0.15**
	Degree or Higher Degree	0.190*	0.074	**0.22**
	Other professional / Miscellaneous	0.001	0.205	**0.00**
Family Salary (compared to 'no salary')	Missing data	0.353*	0.109	**0.41**
	£2,500 – 17,499	-0.019	0.065	**-0.02**
	£17,500 – 29,499	0.209*	0.070	**0.24**
	£30,000 – 37,499	0.168*	0.079	**0.19**
	£37,500 – 67,499	0.144*	0.072	**0.17**
	£67,500 – 132,00+	0.138	0.099	**0.16**
KS1 HLE: Home computing (compared to Very high)	Missing data	-0.280*	0.125	**-0.32**
	Low	0.182*	0.073	**0.21**
	Moderate	0.142*	0.066	**0.16**
	High	0.100	0.062	**0.12**
KS1 HLE: Expressive Play (compared to Very high)	Low	-0.196*	0.074	**-0.23**
	Moderate	-0.031	0.063	**-0.04**
	High	0.010	0.061	**0.01**
Random Effects	**School variance**	0.124	0.023	
	Residual variance	0.749	0.026	
-2LL		-3260.03		

*p<0.05

Table A.2.5: The results of reconstructed original contextualised models of 'Hyperactivity' in Year 5

'Hyperactivity'		Estimate	SE	Effect Size
Fixed Effects	Intercept	0.638	0.124	
Age		-0.009	0.005	**-0.01**
Gender (compared to boys)		-0.593*	0.038	**-0.68**
Ethnic groups	White European Heritage	-0.054	0.108	**-0.06**
(compared to White UK Heritage)	Black Caribbean Heritage	0.182	0.105	**0.21**
	Black African Heritage	0.131	0.136	**0.15**
	Any other Ethnic Minority Heritage	0.018	0.128	**0.02**
	Indian Heritage	-0.334*	0.139	**-0.39**
	Pakistani Heritage	-0.258*	0.106	**-0.30**
	Bangladeshi Heritage	-0.638*	0.186	**-0.74**
	Mixed Heritage	0.165*	0.083	**0.19**
Number of siblings (compared to no siblings)	1-2 siblings	-0.089*	0.049	**-0.10**
	3 + siblings	-0.093	0.067	**-0.11**
Need of EAL support (compared to none)	Missing data	0.159*	0.066	**0.18**
	EAL support needed	0.217*	0.108	**0.25**
Health Problems (compared to none)	1 Health Problem	-0.015	0.043	**-0.02**
	2 Health Problems	-0.074	0.072	**-0.09**
	3+ Health Problems	0.478*	0.161	**0.55**
Behavioural Problems (compared to none)	1 Behavioural Problem	0.325*	0.064	**0.38**
	2+ Behavioural Problems	0.429*	0.128	**0.50**
FSM (compared to none)	Missing data	-0.175	0.280	**-0.20**
	Eligible for FSM	0.170*	0.056	**0.20**
Mother's qualifications (compared to none)	Missing data	-0.028	0.165	**-0.03**
	Vocational	0.077	0.068	**0.09**
	Academic age 16	-0.150*	0.056	**-0.17**
	Academic age 18	-0.191*	0.081	**-0.22**
	Degree or Higher degree	-0.340*	0.074	**-0.39**
	Other professional / Miscellaneous	-0.297	0.202	**-0.34**
Marital status (compared to Married)	Single never married	0.176*	0.066	**0.20**
	Living with partner	0.058	0.055	**0.07**
	Separated / Divorced	0.200*	0.064	**0.23**
	Widow	-0.299	0.369	**-0.35**
	Other	-0.191	0.233	**-0.22**
Maternal employment (compared to working)	Missing data	1.847	0.955	**2.13**
	Not employed	-0.134*	0.048	**-0.16**
Family Salary (compared to 'no salary')	Missing data	-0.319*	0.110	**-0.37**
	£2,500 – 17,499	-0.093	0.069	**-0.11**
	£17,500 – 29,499	-0.296*	0.076	**-0.34**
	£30,000 – 37,499	-0.262*	0.086	**-0.30**
	£37,500 – 67,499	-0.118	0.080	**-0.14**
	£67,500 – 132,00+	-0.026	0.106	**-0.03**
KS1 HLE: Enrichment outing	Missing data	0.230	0.126	**0.27**
(compared to Very high)	Low	-0.216*	0.083	**-0.25**
	Moderate	-0.107	0.071	**-0.12**
	High	-0.146*	0.067	**-0.17**
KS1 HLE: Expressive Play (compared to Very high)	Low	0.175*	0.073	**0.20**
	Moderate	-0.019	0.062	**-0.02**
	High	-0.030	0.060	**-0.03**
Random Effects	**School variance**	0.048	0.015	
	Residual variance	0.751	0.025	
-2LL		-3188.13		

*p<0.05

Table A.2.6: The results of reconstructed original contextualised models of 'Anti-social' behaviour in Year 5

'Anti-social' behaviour		Estimate	SE	Effect size
Fixed Effects	Intercept	0.145	0.094	
Age		0.006	0.005	**0.01**
Gender (compared to boys)		-0.302*	0.041	**-0.33**
Ethnic groups	White European Heritage	-0.121	0.114	**-0.13**
(compared to White UK Heritage)	Black Caribbean Heritage	0.037	0.109	**0.04**
	Black African Heritage	0.358*	0.143	**0.39**
	Any other Ethnic Minority Heritage	0.007	0.135	**0.01**
	Indian Heritage	-0.259	0.147	**-0.28**
	Pakistani Heritage	-0.101	0.107	**-0.11**
	Bangladeshi Heritage	-0.080	0.193	**-0.09**
	Mixed Heritage	-0.025	0.087	**-0.03**
Behavioural Problems (compared to none)	1 Behavioural Problem	0.167*	0.068	**0.18**
	2+ Behavioural Problems	0.198	0.135	**0.21**
FSM (compared to none)	Missing data	-0.407	0.282	**-0.44**
	Eligible for FSM	0.222*	0.055	**0.24**
Mother's qualifications (compared to none)	Missing data	0.213	0.169	**0.23**
	Vocational	0.030	0.071	**0.03**
	Academic age 16	-0.142*	0.058	**-0.15**
	Academic age 18	-0.145	0.085	**-0.16**
	Degree or Higher degree	-0.209*	0.071	**-0.23**
	Other professional / Miscellaneous	-0.205	0.214	**-0.22**
Absent father		0.140*	0.049	**0.15**
KS1 HLE: One-to-one interaction	Missing data	0.146	0.091	**0.16**
(compared to Very high)	Low	0.192*	0.080	**0.21**
	Moderate	0.083	0.068	**0.09**
	High	0.088	0.064	**0.10**
KS1 HLE: Expressive Play (compared to 'very high')	Low	-0.006	0.077	**-0.01**
	Moderate	-0.163*	0.066	**-0.18**
	High	-0.132*	0.063	**-0.14**
Random Effects	**School variance**	0.046	0.018	
	Residual variance	0.863	0.029	
-2LL		-3329.58		

*p<0.05

Appendix 3: The effect of pupils' self-perceptions and views of primary school on outcomes in Year 5: Summary of the results of contextualised models

In order to explore the relationship between pupils' self-perceptions, views of primary school (measured in Year 5) and their outcomes we first conducted analyses using contextualised multilevel models, controlling for important background characteristics as in previous analyses (Sammons et al., 2007a; 2007b). The pupils' perception factors were entered individually into these contextualised multilevel models in addition to significant background characteristics. Therefore the estimates of the effects of the pupils' perceptions are reported 'net' of the impact of background influences. For each set of analysis, each pupils' self-perception factor and perceived primary school factor was entered separately first in the model and then only the significant factors were tested together in the model.[7] Results of each set of analyses are organised by different outcomes in Year 5 and are presented in the following tables.

Table A.3.1: The impact of pupils' perceptions on Reading in Year 5 (contextualised models)

Reading		**Effect Size**[#]	**Description**
Separate in the model	'Enjoyment of school'	0.29 / 0.36 / 0.13	Children who reported medium levels of 'Enjoyment of school' had higher Reading scores in Year 5 than children who either reported low or high levels of 'Enjoyment of school'.
	'Academic self-image'	0.15 / 0.50 / 0.47	Children with higher 'Academic self-image' had higher Reading scores.
	'Behavioural self-image'	0.24 / 0.32 / 0.31	Children with higher 'Behavioural self-image' had higher Reading scores.
Together in the model	'Enjoyment of school'	0.17 / 0.14 / -0.14	Children who reported medium levels of 'Enjoyment of school' had higher Reading scores in Year 5 than children who either reported low or high levels of 'Enjoyment of school'.
	'Academic self-image'	0.12 / 0.45 / 0.46	Children with higher 'Academic self-image' had higher Reading scores.
	'Behavioural self-image'	0.14 / 0.17 / 0.16	Children with higher 'Behavioural self-image' had higher Reading scores.
Interaction	'Enjoyment of school' & 'Academic self-image'	-0.03 – 0.61	Low levels of 'Academic self-image' were related to the lowest Reading scores regardless of the level of 'Enjoyment of school'. However, for higher levels of 'Academic self-image', medium levels of 'Enjoyment of school' were related to the highest Reading scores.
Separate in the model	'Headteacher qualities'	0.11 / 0.12	Children who viewed their Headteachers as having more positive qualities had higher Reading scores.
	'Positive Social Environment'	0.17 / 0.16 / 0.23	Children who viewed their school as having a more 'Positive Social Environment' had higher Reading scores.

[#]*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

[7] Pupils' self-perception factors and perceived learning environment factors were first tested as continuous variables in the models. However, in order to detect curvilinear relationships with the outcome variables, we decided to categorize variables in four groups. The description on how categories were created and the sample size for each category of a particular factor are presented in Appendix 1.

Table A.3.2: The impact of pupils' perceptions on Mathematics in Year 5 (contextualised models)

Mathematics		**Effect Size[#]**	**Description**
Separate in the model	'Enjoyment of school'	0.30 / 0.31 / 0.16	Children who reported medium levels of 'Enjoyment of school' had higher Mathematics scores in Year 5 than children who either reported low or high levels of 'Enjoyment of school'.
	'Academic self-image'	0.32 / 0.69 / 0.64	Children with higher 'Academic self-image' had higher Mathematics scores.
	'Behavioural self-image'	0.18 / 0.23 / 0.24	Children with higher 'Behavioural self-image' had higher Mathematics scores.
Together in the model	'Enjoyment of school'	0.17 / 0.07 / -0.13	Children who reported medium levels of 'Enjoyment of school' had higher Mathematics scores in Year 5 than children who either reported low or high levels of 'Enjoyment of school'.
	'Academic self-image'	0.31 / 0.70 / 0.69	Children with higher 'Academic self-image' had higher Mathematics scores.
Interaction	'Enjoyment of school' & 'Academic self-image'	-0.20 – 0.79	Low levels of 'Academic self-image' were related to the lowest Mathematics scores regardless of the level of 'Enjoyment of school'. However, for higher levels of 'Academic self-image', medium levels of 'Enjoyment of school' were related to the highest Mathematics scores.
Separate in the model	'Positive Social Environment'	0.28 / 0.24 / 0.26	Children who viewed their school as having a more 'Positive Social Environment' had higher Mathematics scores.
Together in the model	'Enjoyment of school'	0.14 / 0.04 / -0.17	Children who reported medium levels of 'Enjoyment of school' had higher Mathematics scores in Year 5 than children who either reported low or high levels of 'Enjoyment of school'.
	'Academic self-image'	0.30 / 0.68 / 0.68	Children with higher 'Academic self-image' had higher Mathematics scores.
	'Positive Social Environment'	0.19 / 0.13 / 0.16	Children who viewed their school as having a more 'Positive Social Environment' had higher Mathematics scores.

[#]*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Table A.3.3: The impact of pupils' perceptions on 'Self-regulation' in Year 5 (contextualised models)

'Self-regulation'		**Effect Size[#]**	**Description**
Separate in the model	'Enjoyment of school'	0.31 / 0.31 / 0.23	Children with medium and high 'Enjoyment of school' had higher 'Self-regulation'.
	'Academic self-image'	0.32 / 0.66 / 0.72	Children with higher 'Academic self-image' had higher 'Self-regulation'.
	'Behavioural self-image'	0.18 / 0.33 / 0.35	Children with higher 'Behavioural self-image' had higher 'Self-regulation'.
Separate in the model	'Teachers' support for pupils' learning'	0.16 / 0.20 / 0.27	Children who reported having higher levels of 'Teachers' support for pupils' learning' in their school had higher levels of 'Self-regulation'.
	'Positive Social Environment'	0.23 / 0.18 / 0.20	Children with medium and high levels of 'Positive Social Environment' in their school had higher 'Self-regulation' scores.

[#]*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Table A.3.4: The impact of pupils' perceptions on 'Pro-social' behaviour in Year 5
(contextualised models)

'Pro-social' behaviour		Effect Size[#]	Description
Separate in the model	'Enjoyment of school'	0.23 / 0.37 / 0.40	Children with higher 'Enjoyment of school' had higher levels of 'Pro-social' behaviour.
	'Academic self-image'	0.18 / 0.40 / 0.41	Children with higher 'Academic self-image' had higher levels of 'Pro-social' behaviour.
	'Behavioural self-image'	0.47 / 0.64 / 0.83	Children with higher 'Behavioural self-image' had higher levels of 'Pro-social' behaviour.
Together in the model	'Academic self-image'	0.13 / 0.24 / 0.19	Children with higher 'Academic self-image' had higher levels of 'Pro-social' behaviour.
	'Behavioural self-image'	0.44 / 0.58 / 0.75	Children with higher 'Behavioural self-image' had higher levels of 'Pro-social' behaviour.
Separate in the model	'Teachers' support for pupils' learning'	0.15 / 0.24 / 0.37	Children who reported having higher levels of 'Teachers' support for pupils' learning' in their school had higher levels of 'Pro-social' behaviour.
	'Headteacher qualities'	0.21 / 0.27	Children who viewed their Headteachers as having more positive qualities had higher levels of 'Pro-social' behaviour.
	'Positive Social Environment'	0.27 / 0.25 / 0.37	Children with higher levels of 'Positive Social Environment' in their school had higher levels of 'Pro-social' behaviour.
Together in the model	'Teachers' support for pupils' learning'	0.10 / 0.17 / 0.27	Children who reported having higher levels of 'Teachers' support for pupils' learning' in their school had higher levels of 'Pro-social' behaviour.
	'Headteacher qualities'	0.13 / 0.14	Children who viewed their Headteachers as having more positive qualities had higher levels of 'Pro-social' behaviour.
	'Positive Social Environment'	0.22 / 0.15 / 0.24	Children with medium and high levels of 'Positive Social Environment' in their school had higher levels of 'Pro-social' behaviour.
Together in the model	'Behavioural self-image'	0.46 / 0.62 / 0.79	Children with higher 'Behavioural self-image' had higher levels of 'Pro-social' behaviour.
	'Teachers' support for pupils' learning'	0.12 / 0.16 / 0.25	Children who reported having higher levels of 'Teachers' support for pupils' learning' in their school had higher levels of 'Pro-social' behaviour.

[#]*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Table A.3.5: The impact of pupils' perceptions on 'Hyperactivity' in Year 5 (contextualised models)

'Hyperactivity'		Effect Size[#]	Description
Separate in the model	'Enjoyment of school'	-0.34 / -0.44 / -0.44	Children with higher 'Enjoyment of school' had lower levels of 'Hyperactivity'.
	'Academic self-image'	-0.23 / -0.51 / -0.37	Children with higher 'Academic self-image' had lower levels of 'Hyperactivity'.
	'Behavioural self-image'	-0.63 / -1.01 / -1.28	Children with higher 'Behavioural self-image' had lower levels of 'Hyperactivity'.
Separate in the model	'Headteacher qualities'	-0.21 / -0.16	Children who viewed their Headteachers as having more positive qualities had lower levels of 'Hyperactivity'
	'Positive Social Environment'	-0.40 / -0.45 / -0.48	Children with higher levels of 'Positive Social Environment' in their school had lower levels of 'Hyperactivity'.
Together in the model	'Behavioural self-image'	-0.60 / -0.98 / -1.25	Children with higher 'Behavioural self-image' had lower levels of 'Hyperactivity'.
	'Positive Social Environment'	-0.30 / -0.25 / -0.20	Children with medium and high levels of 'Positive Social Environment' in their school had lower levels of 'Hyperactivity'.

[#]*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Table A.3.6: The impact of pupils' perceptions on 'Anti-social' behaviour in Year 5 (contextualised models)

'Anti-social' behaviour		Effect Size[#]	Description
Separate in the model	'Enjoyment of school'	-0.05 / -0.13 / -0.17	Children with higher 'Enjoyment of school' had lower levels of 'Anti-social' behaviour.
	'Academic self-image'	-0.08 / -0.18 / -0.09	Children with medium and high 'Academic self-image' had lower levels of 'Anti-social' behaviour.
	'Behavioural self-image'	-0.35 / -0.45 / -0.54	Children with higher 'Behavioural self-image' had lower levels of 'Anti-social' behaviour.
Separate in the model	'Positive Social Environment'	-0.26 / -0.27 / -0.24	Children with medium and high levels of 'Positive Social Environment' in their school had lower levels of 'Anti-social' behaviour.
Together in the model	'Behavioural self-image'	-0.33 / -0.42 / -0.52	Children with higher 'Behavioural self-image' had lower levels of 'Anti-social' behaviour.
	'Positive Social Environment'	-0.21 / -0.18 / -0.11	Children with medium and high levels of 'Positive Social Environment' in their school had lower levels of 'Anti-social' behaviour.

[#]*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Appendix 4: Reduction in variance components and intra-school correlations between contextualised and value added models

Results from contextualised multilevel models show the proportion of variance in Year 5 outcomes accounted for by pupils' perception when controlling for background characteristics only; while results from value added analyses show the proportion of variance in Year 5 outcomes accounted for by pupils' perceptions after controlling for prior attainment and developmental level in addition to controlling for background characteristics. Tables A.4.1 & A.4.2 show average percentage reductions in variance and intra-school correlation when prior attainment and developmental (value add) was included in the models of cognitive and social/behavioural outcomes in Year 5. Since there were several different models calculated for each outcome measure, the tables show average reductions in variance components for different groups of pupils' perception predictors included in the model.

As expected, including prior attainment resulted in a significant reduction of child level variance and total variance for each outcome, particularly for Reading, Mathematics and 'Hyperactivity' outcomes. Previous reports (see Sammons et al., 2007a; 2007b) also showed that prior attainment levels (measured in Year 1) account for reduction in child level and total variance of each particular outcome. In addition, a large reduction of school level variance in value added models was only evident for the 'Hyperactivity' and 'Anti-social' behaviour outcomes. This suggests that pupils' prior levels of 'Hyperactivity' and 'Anti-social' behaviour measured in Year 1 also help to explain differences between schools on these two social/behavioural outcomes measured in Year 5. Correspondingly, a reduction in the inter-school correlation was only evident for the Anti-social outcome, for which there was a larger decrease in school level variance (up to 39%) than in child level variance (5 %), which resulted in 34% of decrease in intra-school correlation for value added models. Intra-school correlation for all other outcomes in value added models increased since including prior attainment in the models resulted in reduction of child level variance only, or the reduction in child level variance was somewhat larger than the reduction of school level variance ('Hyperactivity').

Table A.4.1: Average percentage reduction in variance and intra-school correlation when prior attainment (value added) was included in the pupils' perception models of cognitive outcomes in Year 5 (compared to contextualised models)

		Reading	Mathematics
Average reduction in *school level variance* from contextualised to value add model	Pupils' self-perceptions	*Variance increased*	6%
	Pupils' views of primary school	*Variance increased*	*Variance increased*
Average reduction in *child level variance* from contextualised to value add model	Pupils' self-perceptions	23%	34%
	Pupils' views of primary school	24%	35%
Average reduction in *total variance* from contextualised to value add model	Pupils' self-perceptions	20%	31%
	Pupils' views of primary school	21%	31%
Average reduction in *intra-school correlation*	Pupils' self-perceptions	*Correlation increased*	*Correlation increased*
	Pupils' views of primary school	*Correlation increased*	*Correlation increased*

Table A.4.2: Average percentage reduction in variance and intra-school correlation when prior developmental level (value added) was included in the pupils' perception models of social/behavioural outcomes in Year 5 (compared to contextualised models)

		'Self-regulation'	**'Pro-social' behaviour**	**'Hyperactivity'**	**'Anti-social' behaviour**
Average reduction in *school level variance* from contextualised to value add model	Pupils' self-perceptions	*Variance increased*	*Variance increased*	17%	39%
	Pupils' views of primary school	*Variance increased*	2%	23%	37%
Average reduction in child level variance from contextualised to value add model	Pupils' self-perceptions	18%	8%	23%	5%
	Pupils' views of primary school	18%	9 %	25%	5%
Average reduction in total variance from contextualised to value add model	Pupils' self-perceptions	14%	7%	23%	7%
	Pupils' views of primary school	15%	8%	24%	7%
Average reduction in intra-school correlation	Pupils' self-perceptions	*Correlation increased*	*Correlation increased*	*Correlation increased*	34 %
	Pupils' views of primary school	*Correlation increased*	*Correlation increased*	*Correlation increased*	33 %

Appendix 5: Results of contextualized and value added multilevel analyses

Table A.5.1: Results for final contextualised and value added models for Reading in Year 5 (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M1a – Final contextualised model when both pupils' self-perception factors and views of primary school factors are taken into account.
M1b – Final value added model (i.e., including prior attainment) when both pupils' self-perception factors and views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	100.809	0.381
School Variance	42.008	6.305
Residual Variance	184.273	6.227
-2LL	-10450.11	

Reading		**M1a**			**M1b**		
		Estimate	**SE**	**Effect Size**	**Estimate**	**SE**	**Effect size**
Fixed Effects Intercept		90.799*	2.089		50.694*	2.563	
Age		-0.040	0.069	**0.00**	-0.080	0.065	**-0.01**
Gender (compared to boys)		1.036*	0.531	**0.08**	0.455	0.496	**0.04**
Birth weight	Missing data	0.613	1.953	**0.05**	1.206	1.814	**0.11**
(compared to normal weight)	Very Low (=< 1500g)	-6.112*	2.234	**-0.49**	-2.001	2.092	**-0.18**
	Low (1501 – 2500g)	0.493	1.012	**0.04**	1.300	0.950	**0.12**
Ethnic groups	White European Heritage	-4.066*	1.478	**-0.33**	-1.846	1.374	**-0.17**
(compared to White UK)	Black Caribbean Heritage	-1.031	1.361	**-0.08**	-1.579	1.373	**-0.14**
	Black African Heritage	-2.787	1.860	**-0.23**	-2.793	1.795	**-0.26**
	Any other Ethnic Minority Heritage	-2.745	1.750	**-0.22**	-2.518	1.706	**-0.23**
	Indian Heritage	-0.026	1.854	**0.00**	-0.476	1.756	**-0.04**
	Pakistani Heritage	-3.424*	1.389	**-0.28**	-2.469	1.348	**-0.23**
	Bangladeshi Heritage	-5.085*	2.473	**-0.41**	-1.800	2.378	**-0.17**
	Mixed Heritage	-0.813	1.114	**-0.07**	-0.671	1.060	**-0.06**
Number of siblings	1-2 siblings	-0.901	0.732	**-0.07**	-0.632	0.686	**-0.06**
(compared to no siblings)	3 + siblings	-2.729*	0.990	**-0.22**	-1.353	0.929	**-0.12**
	Missing data	-4.402	4.828	**-0.36**	-4.478	4.767	**-0.41**
Need of EAL support	Missing data	-0.390	0.824	**-0.03**	0.490	0.776	**0.04**
(compared to none)	EAL support needed	-4.468*	1.458	**-0.36**	-1.637	1.405	**-0.15**
Developmental Problems	Missing data	3.124	5.181	**0.25**	-0.967	4.692	**-0.09**
(compared to none)	1 Developmental Problem	-2.240*	0.812	**-0.18**	-0.682	0.773	**-0.06**
	2+ Developmental Problems	-4.583	2.468	**-0.37**	-4.520*	2.340	**-0.41**
FSM (compared to none)		-3.125*	0.760	**-0.25**	-2.328*	0.722	**-0.21**
Mother's qualifications	Missing data	-0.452	2.195	**-0.04**	-1.029	2.046	**-0.09**
(compared to none)	Vocational	0.769	0.966	**0.06**	1.416	0.911	**0.13**
	Academic age 16	2.510*	0.801	**0.20**	2.366*	0.750	**0.22**
	Academic age 18	3.659*	1.174	**0.30**	3.113*	1.097	**0.29**
	Degree or equivalent	7.343*	1.210	**0.59**	6.335*	1.135	**0.58**
	Higher degree	8.767*	1.745	**0.71**	7.363*	1.633	**0.68**
	Other professional / Miscellaneous	4.210*	2.202	**0.34**	2.570	2.099	**0.24**
Father's qualifications	Missing data	-2.119	4.712	**-0.17**	1.774	4.226	**0.16**
(compared to none)	Vocational	1.303	1.033	**0.11**	1.099	0.969	**0.10**
	Academic age 16	-0.023	0.892	**0.00**	-0.316	0.833	**-0.03**
	Academic age 18	0.709	1.219	**0.06**	-0.244	1.146	**-0.02**
	Degree or equivalent	3.194*	1.187	**0.26**	1.419	1.123	**0.13**
	Higher degree	2.888	1.673	**0.23**	2.147	1.559	**0.20**
	Other professional / Miscellaneous	-0.507	2.711	**-0.04**	-2.123	2.473	**-0.19**
	Missing (Absent Father)	0.504	0.867	**0.04**	-0.334	0.816	**-0.03**
Family SES	Other professional non-manual	-1.183	1.003	**-0.10**	-0.542	0.934	**-0.05**
(compared to prof. non-manual)	Skilled non-manual	-2.450*	1.168	**-0.20**	-1.697	1.095	**-0.16**
	Skilled manual	-3.994*	1.217	**-0.32**	-2.773*	1.136	**-0.25**

Family SES continued	Semi-skilled manual	-4.087*	1.467	**-0.33**	-2.710*	1.380	**-0.25**
	Unskilled manual	-4.596*	2.277	**-0.37**	-3.925	2.141	**-0.36**
	Unemployed / Never Worked	-3.585*	1.565	**-0.29**	-2.710	1.463	**-0.25**
	Missing data	-1.166	4.172	**-0.09**	3.782	4.150	**0.35**
Family Salary	Missing data	0.107	1.181	**0.01**	-0.017	1.112	**0.00**
(compared to 'no salary')	£2,500 – 17,499	-0.060	1.189	**0.00**	-0.809	1.109	**-0.07**
	£17,500 – 29,499	1.211	1.242	**0.10**	-0.326	1.156	**-0.03**
	£30,000 – 37,499	0.175	1.354	**0.01**	-1.610	1.265	**-0.15**
	£37,500 – 67,499	2.191	1.308	**0.18**	-0.050	1.221	**0.00**
	£67,500 – 132,00+	2.850	1.656	**0.23**	0.539	1.545	**0.05**
Early Years HLE (compared to 0-13)	Missing data	0.429	1.981	**0.03**	-1.285	1.825	**-0.12**
	14-19	1.741	1.020	**0.14**	1.370	0.965	**0.13**
	20-24	3.286*	1.034	**0.27**	2.622*	0.979	**0.24**
	25-32	5.009*	1.030	**0.41**	3.690*	0.974	**0.34**
	33-45	6.715*	1.229	**0.54**	4.606*	1.157	**0.42**
'Enjoyment of school'	Medium Low	2.074*	0.803	**0.17**	1.707*	0.748	**0.16**
(compared to Low)	Medium High	1.771*	0.846	**0.14**	1.410*	0.790	**0.13**
	High	-1.715	1.002	**-0.14**	-1.255	0.943	**-0.12**
	Missing data	1.589	4.267	**0.13**	2.207	4.394	**0.20**
'Academic self-image'	Medium Low	1.435	0.807	**0.12**	0.398	0.750	**0.04**
(compared to Low)	Medium High	5.600*	0.799	**0.45**	3.698*	0.751	**0.34**
	High	5.693*	0.979	**0.46**	3.564*	0.921	**0.33**
	Missing data	1.386	3.586	**0.11**	0.626	3.847	**0.06**
'Behavioural self-image'	Medium Low	1.765*	0.801	**0.14**	1.544*	0.749	**0.14**
(compared to Low)	Medium High	2.082*	0.872	**0.17**	1.723*	0.817	**0.16**
	High	1.954*	0.930	**0.16**	1.671*	0.872	**0.15**
Reading in Year 1					0.429*	0.018	**0.04**
Random Effects	**School variance**	3.522	2.687		6.641	2.807	
	Residual variance	152.616	4.940		118.952	4.172	
-2LL		-9945.92			-8821.88		

* p< 0.05

Table A.5.2: Results for contextualised and value added models for Reading in Year 5 without self-perception factors (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M2a – Final contextualised model when only pupils' views of primary school factors are taken into account.
M2b – Final value added model (i.e., including prior developmental level) when only pupils' views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	100.809	0.381
School Variance	42.008	6.305
Residual Variance	184.273	6.227
-2LL	-10450.11	

Reading		**M2a**			**M2b**		
		Estimate	**SE**	**Effect Size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	94.165*	2.085		51.401*	2.579	
Age		0.002	0.071	**0.00**	-0.052	0.066	**0.00**
Gender (compared to boys)		1.248*	0.525	**0.10**	0.607	0.488	**0.05**
Birth weight	Missing data	0.185	1.992	**0.01**	0.888	1.835	**0.08**
(compared to normal weight)	Very Low (=< 1500g)	-5.302*	2.274	**-0.42**	-1.228	2.114	**-0.11**
	Low (1501 – 2500g)	0.485	1.033	**0.04**	1.313	0.962	**0.12**
Ethnic groups	White European Heritage	-4.640*	1.507	**-0.37**	-2.318	1.390	**-0.21**
(compared to White UK)	Black Caribbean Heritage	-0.510	1.382	**-0.04**	-1.442	1.385	**-0.13**
	Black African Heritage	-2.460	1.893	**-0.19**	-2.519	1.815	**-0.23**
	Any other Ethnic Minority Heritage	-1.907	1.782	**-0.15**	-2.130	1.726	**-0.19**
	Indian Heritage	0.590	1.881	**0.05**	-0.121	1.777	**-0.01**
	Pakistani Heritage	-2.888*	1.396	**-0.23**	-2.034	1.361	**-0.18**
	Bangladeshi Heritage	-4.224	2.519	**-0.33**	-0.975	2.407	**-0.09**
	Mixed Heritage	-0.825	1.139	**-0.07**	-0.746	1.077	**-0.07**
Number of siblings	1-2 siblings	-0.660	0.745	**-0.05**	-0.478	0.694	**-0.04**
(compared to no siblings)	3 + siblings	-2.585*	1.010	**-0.20**	-1.197	0.940	**-0.11**
	Missing data	-2.370	4.933	**-0.19**	-2.759	4.829	**-0.25**
Need of EAL support	Missing data	-0.653	0.837	**-0.05**	0.381	0.784	**0.03**
(compared to none)	EAL support needed	-4.619*	1.479	**-0.36**	-1.556	1.418	**-0.14**
Developmental Problems	Missing data	6.363	5.279	**0.50**	0.930	4.746	**0.08**
(compared to none)	1 Developmental Problem	-2.167*	0.829	**-0.17**	-0.567	0.782	**-0.05**
	2+ Developmental Problems	-4.967*	2.516	**-0.39**	-4.633*	2.370	**-0.42**
FSM (compared to none)		-3.440*	0.774	**-0.27**	-2.566*	0.730	**-0.23**
Mother's qualifications	Missing data	0.523	2.242	**0.04**	-0.275	2.073	**-0.02**
(compared to none)	Vocational	1.437	0.986	**0.11**	1.960*	0.924	**0.18**
	Academic age 16	2.824*	0.817	**0.22**	2.617*	0.758	**0.24**
	Academic age 18	4.297*	1.198	**0.34**	3.488*	1.111	**0.32**
	Degree or equivalent	8.193*	1.233	**0.65**	6.844*	1.150	**0.62**
	Higher degree	9.873*	1.779	**0.78**	8.157*	1.654	**0.74**
	Other professional / Miscellaneous	5.052*	2.248	**0.40**	2.998	2.127	**0.27**
Father's qualifications	Missing data	-5.583	4.805	**-0.44**	-0.457	4.276	**-0.04**
(compared to none)	Vocational	1.580	1.055	**0.12**	1.201	0.981	**0.11**
	Academic age 16	0.229	0.910	**0.02**	-0.135	0.843	**-0.01**
	Academic age 18	1.133	1.242	**0.09**	-0.079	1.158	**-0.01**
	Degree or equivalent	3.849*	1.211	**0.30**	1.772	1.137	**0.16**
	Higher degree	3.438*	1.708	**0.27**	2.374	1.579	**0.21**
	Other professional / Miscellaneous	-0.050	2.764	**0.00**	-1.864	2.501	**-0.17**
	Missing (Absent Father)	0.726	0.883	**0.06**	-0.208	0.826	**-0.02**
Family SES	Other professional non-manual	-1.480	1.022	**-0.12**	-0.843	0.944	**-0.08**
(compared to prof. non-manual)	Skilled non-manual	-2.778*	1.189	**-0.22**	-2.085	1.105	**-0.19**
	Skilled manual	-4.180*	1.241	**-0.33**	-3.041*	1.150	**-0.28**
	Semi-skilled manual	-4.599*	1.496	**-0.36**	-3.194*	1.396	**-0.29**
	Unskilled manual	-4.752*	2.324	**-0.38**	-4.018	2.168	**-0.36**
	Unemployed / Never Worked	-3.220*	1.597	**-0.25**	-2.506	1.482	**-0.23**
	Missing data	-2.028	4.258	**-0.16**	2.981	4.207	**0.27**

Family Salary	Missing data	0.171	1.205	**0.01**	0.001	1.125	**0.00**
(compared to 'no salary')	£2,500 – 17,499	-0.068	1.214	**-0.01**	-0.809	1.123	**-0.07**
	£17,500 – 29,499	1.414	1.269	**0.11**	-0.215	1.172	**-0.02**
	£30,000 – 37,499	0.437	1.384	**0.03**	-1.470	1.283	**-0.13**
	£37,500 – 67,499	2.414	1.338	**0.19**	-0.003	1.239	**0.00**
	£67,500 – 132,00+	3.129	1.691	**0.25**	0.595	1.567	**0.05**
Early Years HLE (compared to 0-13)	Missing data	-0.447	2.018	**-0.04**	-1.980	1.845	**-0.18**
	14-19	1.579	1.042	**0.12**	1.130	0.977	**0.10**
	20-24	3.207*	1.055	**0.25**	2.517*	0.990	**0.23**
	25-32	4.959*	1.051	**0.39**	3.518*	0.987	**0.32**
	33-45	7.264*	1.257	**0.57**	4.837*	1.176	**0.44**
'Positive Social Environment'	Medium Low	2.110*	0.785	**0.17**	1.393*	0.729	**0.13**
(compared to Low)	Medium High	2.067*	0.806	**0.16**	1.943*	0.751	**0.18**
	High	2.879*	0.934	**0.23**	2.196*	0.874	**0.20**
	Missing data	-2.267	2.208	**-0.18**	-0.387	2.008	**-0.04**
Reading in Year 1					0.447*	0.018	**0.04**
Random Effects	**School variance**	2.796	2.580		7.015	2.833	
	Residual variance	160.169	5.105		122.209	4.254	
-2LL		-10008.91			-8862.56		

* p< 0.05

Table A.5.3: Results for final contextualised and value added models for Mathematics in Year 5 (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M1a – Final contextualised model when both pupils' self-perception factors and views of primary school factors are taken into account.

M1b – Final value added model (i.e., including prior attainment) when both pupils' self-perception factors and views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	100.947	0.388
School Variance	47.671	6.245
Residual Variance	177.597	5.960
-2LL	-10358.57	

Mathematics		**M1a**			**M1b**		
		Estimate	**SE**	**Effect Size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	87.659*	2.051		38.274*	2.349	
Age		-0.019	0.071	**0.00**	-0.026	0.062	**0.00**
Birth weight	Missing data	3.034	1.976	**0.25**	3.406*	1.705	**0.34**
(compared to normal weight)	Very Low (=< 1500g)	-6.336*	2.256	**-0.52**	-2.079	1.993	**-0.21**
	Low (1501 – 2500g)	-1.471	1.038	**-0.12**	0.006	0.906	**0.00**
Ethnic groups	White European Heritage	-1.688	1.515	**-0.14**	-1.475	1.298	**-0.15**
(compared to White UK)	Black Caribbean Heritage	0.514	1.429	**0.04**	1.653	1.345	**0.17**
	Black African Heritage	-3.183	1.917	**-0.26**	-2.501	1.719	**-0.25**
	Any other Ethnic Minority Heritage	0.075	1.816	**0.01**	1.104	1.680	**0.11**
	Indian Heritage	4.206*	1.973	**0.35**	6.130*	1.726	**0.62**
	Pakistani Heritage	-0.669	1.526	**-0.06**	1.016	1.347	**0.10**
	Bangladeshi Heritage	-1.489	2.549	**-0.12**	1.050	2.256	**0.11**
	Mixed Heritage	-0.280	1.151	**-0.02**	-0.468	1.015	**-0.05**
Need of EAL support	Missing data	-1.633	0.862	**-0.13**	-0.575	0.751	**-0.06**
(compared to none)	EAL support needed	-5.419*	1.490	**-0.45**	-3.006*	1.339	**-0.30**
Health Problems	Missing data	4.111	5.262	**0.34**	-2.413	4.439	**-0.24**
(compared to none)	1 Health Problem	-0.322	0.600	**-0.03**	0.407	0.522	**0.04**
	2 Health Problems	0.035	1.024	**0.00**	0.478	0.882	**0.05**
	3+ Health Problems	-5.286*	2.230	**-0.44**	-2.105	2.046	**-0.21**
FSM (compared to none)		-2.318*	0.775	**-0.19**	-0.638	0.687	**-0.06**
Mother's qualifications	Missing data	-0.531	2.227	**-0.04**	-1.016	1.929	**-0.10**
(compared to none)	Vocational	0.318	0.982	**0.03**	0.875	0.864	**0.09**
	Academic age 16	2.517*	0.812	**0.21**	2.258*	0.707	**0.23**
	Academic age 18	4.638*	1.195	**0.38**	4.249*	1.036	**0.43**
	Degree or equivalent	6.544*	1.237	**0.54**	4.344*	1.085	**0.44**
	Higher degree	6.100*	1.782	**0.50**	4.137*	1.555	**0.42**
	Other professional / Miscellaneous	6.088*	2.222	**0.50**	4.836*	1.965	**0.49**
Father's qualifications	Missing data	-6.304	4.714	**-0.52**	-1.850	3.925	**-0.19**
(compared to none)	Vocational	2.344*	1.049	**0.19**	1.166	0.914	**0.12**
	Academic age 16	0.998	0.907	**0.08**	0.388	0.785	**0.04**
	Academic age 18	-0.183	1.242	**-0.02**	0.568	1.081	**0.06**
	Degree or equivalent	3.195*	1.210	**0.26**	1.892	1.065	**0.19**
	Higher degree	3.918*	1.711	**0.32**	3.300*	1.477	**0.33**
	Other professional / Miscellaneous	0.792	2.734	**0.07**	1.003	2.314	**0.10**
	Missing (Absent Father)	0.416	0.879	**0.03**	-0.014	0.769	**0.00**
Family SES	Other professional non-manual	-1.558	1.023	**-0.13**	-0.671	0.886	**-0.07**
(compared to prof. non-manual)	Skilled non-manual	-2.982*	1.189	**-0.25**	-1.566	1.036	**-0.16**
	Skilled manual	-3.452*	1.239	**-0.28**	-1.765	1.077	**-0.18**
	Semi-skilled manual	-3.918*	1.496	**-0.32**	-2.616*	1.307	**-0.26**
	Unskilled manual	-3.748	2.317	**-0.31**	-0.879	2.023	**-0.09**
	Unemployed / Never Worked	-2.709	1.592	**-0.22**	-1.870	1.396	**-0.19**
	Missing data	-3.409	3.197	**-0.28**	0.603	2.990	**0.06**
Family Salary	Missing data	1.468	1.209	**0.12**	0.727	1.065	**0.07**
(compared to 'no salary')	£2,500 – 17,499	0.982	1.210	**0.08**	-0.077	1.054	**-0.01**

Family Salary continued	£17,500 – 29,499	2.139	1.268	**0.18**	0.595	1.103	**0.06**
	£30,000 – 37,499	2.250	1.380	**0.19**	0.353	1.204	**0.04**
	£37,500 – 67,499	3.574*	1.339	**0.29**	0.743	1.168	**0.07**
	£67,500 – 132,00+	3.487*	1.697	**0.29**	0.861	1.479	**0.09**
Early Years HLE (compared to 0-13)	Missing data	2.138	2.010	**0.18**	1.347	1.727	**0.14**
	14-19	2.408*	1.038	**0.20**	0.749	0.921	**0.08**
	20-24	2.224*	1.046	**0.18**	0.337	0.930	**0.03**
	25-32	4.306*	1.043	**0.35**	1.090	0.926	**0.11**
	33-45	5.571*	1.227	**0.46**	1.294	1.083	**0.13**
'Enjoyment of school'	Medium Low	1.748*	0.815	**0.14**	1.422*	0.705	**0.14**
(compared to Low)	Medium High	0.536	0.868	**0.04**	0.284	0.750	**0.03**
	High	-2.035*	1.029	**-0.17**	-0.061	0.896	**-0.01**
	Missing data	-1.397	4.703	**-0.12**	-2.866	4.457	**-0.29**
'Academic self-image'	Medium Low	3.637	0.824	**0.30**	2.559*	0.713	**0.26**
(compared to Low)	Medium High	8.287*	0.809	**0.68**	5.140*	0.709	**0.52**
	High	8.277*	0.981	**0.68**	4.892*	0.860	**0.49**
	Missing data	6.988*	3.622	**0.58**	4.863	3.602	**0.49**
'Positive Social Environment'	Medium Low	2.363*	0.801	**0.19**	0.937	0.695	**0.09**
(compared to Low)	Medium High	1.603*	0.845	**0.13**	-0.126	0.737	**-0.01**
	High	1.960*	0.994	**0.16**	0.248	0.869	**0.02**
	Missing data	-3.536	2.870	**-0.29**	-1.293	2.500	**-0.13**
Mathematics in Year 1					0.548*	0.017	**0.06**
Random Effects	**School variance**	18.345	4.078		17.605	3.311	
	Residual variance	147.500	5.004		99.134	3.572	
-2LL		-9905.49			-8607.56		

* p< 0.05

Table A.5.4: Results for contextualised and value added models for Mathematics in Year 5 without self-perception factors (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M2a – Final contextualised model when only pupils' views of primary school factors are taken into account.
M2b – Final value added model (i.e., including prior developmental level) when only pupils' views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	100.947	0.388
School Variance	47.671	6.245
Residual Variance	177.597	5.960
-2LL	-10358.57	

Mathematics		**M2a**			**M2b**		
		Estimate	**SE**	**Effect Size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	91.983*	2.041		39.079*	2.352	
Age		0.034	0.073	**0.00**	0.000	0.063	**0.00**
Birth weight	Missing data	2.407	2.033	**0.19**	2.878	1.729	**0.28**
(compared to normal weight)	Very Low (=< 1500g)	-5.750*	2.319	**-0.46**	-1.782	2.017	**-0.18**
	Low (1501 – 2500g)	-1.477	1.068	**-0.12**	0.136	0.918	**0.01**
Ethnic groups	White European Heritage	-2.386	1.558	**-0.19**	-1.791	1.314	**-0.18**
(compared to White UK)	Black Caribbean Heritage	1.360	1.458	**0.11**	2.048	1.356	**0.20**
	Black African Heritage	-2.787	1.963	**-0.22**	-2.170	1.736	**-0.21**
	Any other Ethnic Minority Heritage	1.039	1.861	**0.08**	1.469	1.700	**0.14**
	Indian Heritage	4.900*	2.009	**0.39**	6.774*	1.741	**0.67**
	Pakistani Heritage	-0.356	1.544	**-0.03**	1.571	1.353	**0.15**
	Bangladeshi Heritage	-0.829	2.613	**-0.07**	1.700	2.282	**0.17**
	Mixed Heritage	-0.486	1.183	**-0.04**	-0.606	1.028	**-0.06**
Need of EAL support	Missing data	-2.101*	0.882	**-0.17**	-0.874	0.759	**-0.09**
(compared to none)	EAL support needed	-6.299*	1.525	**-0.50**	-3.575*	1.352	**-0.35**
Health Problems	Missing data	7.656	5.407	**0.61**	-0.269	4.495	**-0.03**
(compared to none)	1 Health Problem	-0.362	0.617	**-0.03**	0.464	0.528	**0.05**
	2 Health Problems	0.088	1.054	**0.01**	0.417	0.894	**0.04**
	3+ Health Problems	-5.011*	2.294	**-0.40**	-1.753	2.074	**-0.17**
FSM (compared to none)		-2.692*	0.795	**-0.21**	-0.726	0.696	**-0.07**
Mother's qualifications	Missing data	0.239	2.291	**0.02**	-0.720	1.956	**-0.07**
(compared to none)	Vocational	0.807	1.009	**0.06**	1.055	0.875	**0.10**
	Academic age 16	2.711*	0.836	**0.22**	2.296*	0.717	**0.23**
	Academic age 18	5.021*	1.229	**0.40**	4.385*	1.050	**0.43**
	Degree or equivalent	7.203*	1.270	**0.57**	4.526*	1.099	**0.45**
	Higher degree	7.132*	1.830	**0.57**	4.563*	1.575	**0.45**
	Other professional / Miscellaneous	6.740*	2.289	**0.53**	5.117*	1.995	**0.50**
Father's qualifications	Missing data	-9.375*	4.852	**-0.74**	-3.462	3.979	**-0.34**
(compared to none)	Vocational	2.607*	1.080	**0.21**	1.237	0.927	**0.12**
	Academic age 16	1.341	0.933	**0.11**	0.562	0.795	**0.06**
	Academic age 18	0.432	1.276	**0.03**	1.024	1.095	**0.10**
	Degree or equivalent	4.112*	1.241	**0.33**	2.293*	1.077	**0.23**
	Higher degree	4.691*	1.758	**0.37**	3.768*	1.496	**0.37**
	Other professional / Miscellaneous	1.217	2.814	**0.10**	1.037	2.344	**0.10**
	Missing (Absent Father)	0.688	0.903	**0.05**	0.150	0.780	**0.01**
Family SES	Other professional non-manual	-1.793	1.051	**-0.14**	-0.693	0.897	**-0.07**
(compared to prof. non-manual)	Skilled non-manual	-3.302*	1.220	**-0.26**	-1.643	1.048	**-0.16**
	Skilled manual	-3.655*	1.274	**-0.29**	-1.763	1.091	**-0.17**
	Semi-skilled manual	-4.157*	1.538	**-0.33**	-2.601*	1.325	**-0.26**
	Unskilled manual	-3.798	2.381	**-0.30**	-0.617	2.051	**-0.06**
	Unemployed / Never Worked	-2.234	1.638	**-0.18**	-1.491	1.416	**-0.15**
	Missing data	-2.309	3.280	**-0.18**	1.242	3.024	**0.12**
Family Salary	Missing data	1.498	1.243	**0.12**	0.719	1.079	**0.07**
(compared to 'no salary')	£2,500 – 17,499	0.888	1.247	**0.07**	-0.216	1.069	**-0.02**
	£17,500 – 29,499	2.430	1.306	**0.19**	0.613	1.118	**0.06**
	£30,000 – 37,499	2.568	1.422	**0.20**	0.414	1.222	**0.04**

Family Salary continued	£37,500 – 67,499	3.904*	1.378	**0.31**	0.809	1.185	**0.08**
	£67,500 – 132,00+	4.002*	1.744	**0.32**	0.997	1.500	**0.10**
Early Years HLE (compared to 0-13)	Missing data	0.818	2.063	**0.06**	0.425	1.744	**0.04**
	14-19	2.205*	1.069	**0.17**	0.456	0.932	**0.04**
	20-24	2.135*	1.076	**0.17**	0.188	0.940	**0.02**
	25-32	4.195*	1.072	**0.33**	0.802	0.937	**0.08**
	33-45	6.103*	1.263	**0.48**	1.341	1.098	**0.13**
'Positive Social Environment'	Medium Low	3.556*	0.805	**0.28**	1.693*	0.690	**0.17**
(compared to Low)	Medium High	3.085*	0.830	**0.24**	0.847	0.716	**0.08**
	High	3.325*	0.964	**0.26**	1.297	0.833	**0.13**
	Missing data	-2.824	2.303	**-0.22**	-1.816	1.928	**-0.18**
Mathematics in Year 1					0.571*	0.017	**0.06**
Random Effects	**School variance**	15.463	4.029		16.580	3.284	
	Residual variance	158.768	5.339		102.901	3.684	
-2LL		-9986.63			-8649.74		

* p< 0.05

Table A.5.5: Results for final contextualised and value added models for 'Self-regulation' in Year 5 (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M1a – Final contextualised model when both pupils' self-perception factors and views of primary school factors are taken into account.
M1b – Final value added model (i.e., including prior attainment) when both pupils' self-perception factors and views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	0.006	0.022
School Variance	0.039	0.015
Residual Variance	0.962	0.030
-2LL	-3559.07	

'Self-regulation'		**M1a**			**M1b**		
		Estimate	**SE**	**Effect Size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	-0.954*	0.102		-0.636*	0.103	
Age		0.031	0.005	**0.03**	0.013	0.005	**0.02**
Gender (compared to boys)		0.183*	0.038	**0.20**	0.032	0.038	**0.04**
Birth weight	Missing data	0.007	0.147	**0.01**	0.001	0.148	**0.00**
(compared to normal weight)	Very Low (=< 1500g)	-0.258	0.167	**-0.29**	-0.059	0.165	**-0.07**
	Low (1501 – 2500g)	-0.226*	0.074	**-0.25**	-0.126	0.073	**-0.15**
Behavioural Problems	1 Behavioural Problem	-0.230*	0.060	**-0.26**	-0.155*	0.060	**-0.19**
(compared to none)	2+ Behavioural Problems	-0.115	0.182	**-0.13**	-0.040	0.180	**-0.05**
Need of EAL support	Missing data	-0.208*	0.067	**-0.23**	-0.104	0.066	**-0.13**
(compared to none)	EAL support needed	-0.422*	0.106	**-0.47**	-0.293*	0.107	**-0.36**
FSM (compared to none)	Missing data	0.167	0.269	**0.19**	0.022	0.313	**0.03**
	Eligible for FSM	-0.120*	0.057	**-0.13**	-0.022	0.056	**-0.03**
Mother's qualifications	Missing data	0.038	0.162	**0.04**	0.069	0.160	**0.08**
(compared to none)	Vocational	0.004	0.070	**0.00**	0.040	0.069	**0.05**
	Academic age 16	0.040	0.059	**0.04**	0.035	0.058	**0.04**
	Academic age 18	0.041	0.086	**0.05**	0.091	0.084	**0.11**
	Degree or Higher Degree	0.191*	0.084	**0.21**	0.137	0.083	**0.17**
	Other professional / Miscellaneous	0.220	0.211	**0.25**	0.055	0.227	**0.07**
Father's qualifications	Vocational	0.099	0.076	**0.11**	0.031	0.074	**0.04**
(compared to none)	Academic age 16	0.141*	0.066	**0.16**	0.086	0.064	**0.11**
	Academic age 18	0.133	0.088	**0.15**	0.074	0.085	**0.09**
	Degree or equivalent	0.247*	0.085	**0.28**	0.164*	0.083	**0.20**
	Higher degree	0.157	0.112	**0.18**	0.047	0.111	**0.06**
	Other professional / Miscellaneous	0.080	0.199	**0.09**	0.016	0.200	**0.02**
	Missing (Absent Father)	0.190*	0.063	**0.21**	0.156*	0.062	**0.19**
Family Salary	Missing data	0.069	0.066	**0.08**	0.082	0.066	**0.10**
(compared to 'no salary')	£2,500 – 17,499	0.118	0.066	**0.13**	0.101	0.064	**0.12**
	£17,500 – 29,499	0.227*	0.070	**0.25**	0.164*	0.069	**0.20**
	£30,000 – 37,499	0.241*	0.081	**0.27**	0.188*	0.079	**0.23**
	£37,500 – 67,499	0.227*	0.074	**0.25**	0.139*	0.073	**0.17**
	£67,500 – 132,00+	0.238*	0.100	**0.27**	0.195*	0.100	**0.24**
Early Years HLE (compared to 0-13)	Missing data	0.231	0.148	**0.26**	0.156	0.142	**0.19**
	14-19	0.175*	0.075	**0.20**	0.094	0.076	**0.12**
	20-24	0.176*	0.075	**0.20**	0.093	0.076	**0.11**
	25-32	0.264*	0.075	**0.29**	0.144*	0.076	**0.18**
	33-45	0.392*	0.089	**0.44**	0.265*	0.089	**0.32**
'Academic self-image'	Medium Low	0.286*	0.059	**0.32**	0.172*	0.058	**0.21**
(compared to Low)	Medium High	0.592*	0.055	**0.66**	0.435*	0.055	**0.53**
	High	0.643*	0.067	**0.72**	0.461*	0.066	**0.56**
	Missing data	0.426*	0.158	**0.48**	0.366*	0.159	**0.45**
'Self-regulation' in Year 1					0.400*	0.020	**0.49**
Random Effects	**School variance**	0.025	0.013		0.051	0.016	
	Residual variance	0.803	0.026		0.668	0.024	
-2LL		-3239.15			-2749.82		

* p< 0.05

Table A.5.6: Results for contextualised and value added models for 'Self-regulation' in Year 5 excluding self-perception factors (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M2a – Final contextualised model when only pupils' views of primary school factors are taken into account.
M2b – Final value added model (i.e., including prior developmental level) when only pupils' views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	0.006	0.022
School Variance	0.039	0.015
Residual Variance	0.962	0.030
-2LL	-3559.07	

'Self-regulation'		**M2a**			**M2b**		
		Estimate	**SE**	**Effect Size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	-0.680*	0.104		-0.436*	0.104	
Age		0.034	0.005	**0.04**	0.014	0.005	**0.02**
Gender (compared to boys)		0.188*	0.039	**0.20**	0.026	0.039	**0.03**
Birth weight	Missing data	-0.039	0.151	**-0.04**	-0.050	0.150	**-0.06**
(compared to normal weight)	Very Low (=< 1500g)	-0.198	0.171	**-0.21**	-0.012	0.167	**-0.01**
	Low (1501 – 2500g)	-0.198*	0.076	**-0.21**	-0.100	0.074	**-0.12**
Behavioural Problems	1 Behavioural Problem	-0.229*	0.062	**-0.25**	-0.145*	0.061	**-0.17**
(compared to none)	2+ Behavioural Problems	-0.143	0.187	**-0.16**	-0.056	0.183	**-0.07**
Need of EAL support	Missing data	-0.238*	0.069	**-0.26**	-0.116	0.067	**-0.14**
(compared to none)	EAL support needed	-0.490*	0.109	**-0.53**	-0.328*	0.109	**-0.39**
FSM (compared to none)	Missing data	0.292	0.276	**0.32**	0.080	0.318	**0.10**
	Eligible for FSM	-0.134*	0.058	**-0.15**	-0.034	0.057	**-0.04**
Mother's qualifications	Missing data	0.050	0.167	**0.05**	0.079	0.163	**0.09**
(compared to none)	Vocational	0.015	0.072	**0.02**	0.049	0.071	**0.06**
	Academic age 16	0.042	0.060	**0.05**	0.034	0.059	**0.04**
	Academic age 18	0.062	0.088	**0.07**	0.114	0.085	**0.14**
	Degree or Higher Degree	0.215*	0.086	**0.23**	0.150	0.084	**0.18**
	Other professional / Miscellaneous	0.231	0.217	**0.25**	0.058	0.231	**0.07**
Father's qualifications	Vocational	0.118	0.078	**0.13**	0.034	0.076	**0.04**
(compared to none)	Academic age 16	0.153*	0.067	**0.17**	0.086	0.065	**0.10**
	Academic age 18	0.181*	0.090	**0.20**	0.106	0.087	**0.13**
	Degree or equivalent	0.302*	0.087	**0.33**	0.196*	0.085	**0.24**
	Higher degree	0.225*	0.115	**0.24**	0.091	0.113	**0.11**
	Other professional / Miscellaneous	0.086	0.205	**0.09**	0.057	0.204	**0.07**
	Missing (Absent Father)	0.202*	0.065	**0.22**	0.164*	0.063	**0.20**
Family Salary	Missing data	0.031	0.068	**0.03**	0.056	0.067	**0.07**
(compared to 'no salary')	£2,500 – 17,499	0.083	0.067	**0.09**	0.072	0.065	**0.09**
	£17,500 – 29,499	0.202*	0.072	**0.22**	0.144*	0.070	**0.17**
	£30,000 – 37,499	0.231*	0.083	**0.25**	0.170*	0.080	**0.20**
	£37,500 – 67,499	0.212*	0.076	**0.23**	0.119	0.074	**0.14**
	£67,500 – 132,00+	0.232*	0.103	**0.25**	0.193*	0.102	**0.23**
Early Years HLE (compared to 0-13)	Missing data	0.190	0.151	**0.21**	0.118	0.144	**0.14**
	14-19	0.151*	0.077	**0.16**	0.060	0.077	**0.07**
	20-24	0.164*	0.077	**0.18**	0.073	0.077	**0.09**
	25-32	0.244*	0.077	**0.26**	0.117	0.077	**0.14**
	33-45	0.420*	0.091	**0.46**	0.265*	0.090	**0.32**
'Teachers' support for	Medium Low	0.145*	0.058	**0.16**	0.117*	0.056	**0.14**
pupils' learning')	Medium High	0.188*	0.058	**0.20**	0.143*	0.056	**0.17**
(compared to Low)	High	0.245*	0.068	**0.27**	0.207*	0.067	**0.25**
	Missing data	0.007	0.182	**0.01**	0.190	0.171	**0.23**
'Self-regulation' in Year 1					0.429*	0.021	**0.52**
Random Effects	**School variance**	0.025	0.013		0.051	0.016	
	Residual variance	0.849	0.027		0.693	0.024	
-2LL		-3303.09			-2786.46		

* p< 0.05

Table A.5.7: Results for final contextualised and value added models for 'Pro-social' behaviour in Year 5 (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M1a – Final contextualised model when both pupils' self-perception factors and views of primary school factors are taken into account.
M1b – Final value added model (i.e., including prior attainment) when both pupils' self-perception factors and views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	-0.007	0.024
School Variance	0.122	0.023
Residual Variance	0.879	0.029
-2LL	-3530.26	

'Pro-social' behaviour		**M1a**			**M1b**		
		Estimate	**SE**	**Effect size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	-0.954*	0.107		-0.698*	0.111	
Age		0.011	0.005	**0.01**	0.006	0.005	**0.01**
Gender (compared to boys)		0.433*	0.039	**0.52**	0.356*	0.041	**0.44**
Behavioural Problems	1 Behavioural Problem	-0.170*	0.063	**-0.20**	-0.139*	0.065	**-0.17**
(compared to none)	2+ Behavioural Problems	-0.141	0.125	**-0.17**	-0.195	0.132	**-0.24**
FSM (compared to none)	Missing data	0.276	0.269	**0.33**	0.091	0.325	**0.11**
	Eligible for FSM	-0.126*	0.055	**-0.15**	-0.116*	0.057	**-0.14**
Mother's qualifications	Missing data	0.075	0.154	**0.09**	0.188	0.157	**0.23**
(compared to none)	Vocational	-0.006	0.066	**-0.01**	0.015	0.068	**0.02**
	Academic age 16	0.149*	0.055	**0.18**	0.140*	0.056	**0.17**
	Academic age 18	0.097	0.080	**0.12**	0.045	0.082	**0.06**
	Degree or Higher Degree	0.168*	0.072	**0.20**	0.098	0.075	**0.12**
	Other professional / Miscellaneous	-0.024	0.199	**-0.03**	-0.123	0.227	**-0.15**
Family Salary	Missing data	0.295*	0.106	**0.35**	0.199	0.110	**0.25**
(compared to 'no salary')	£2,500 – 17,499	0.007	0.064	**0.01**	-0.065	0.065	**-0.08**
	£17,500 – 29,499	0.191*	0.068	**0.23**	0.122	0.069	**0.15**
	£30,000 – 37,499	0.148*	0.077	**0.18**	0.058	0.079	**0.07**
	£37,500 – 67,499	0.130	0.070	**0.15**	0.077	0.072	**0.10**
	£67,500 – 132,00+	0.138	0.096	**0.16**	0.053	0.099	**0.07**
KS1 HLE: Home computing	Missing data	-0.243*	0.121	**-0.29**	-0.211	0.126	**-0.26**
(compared to Very high)	Low	0.176*	0.071	**0.21**	0.160*	0.071	**0.20**
	Moderate	0.139*	0.065	**0.17**	0.105	0.066	**0.13**
	High	0.106	0.061	**0.13**	0.094	0.062	**0.12**
KS1 HLE: Expressive Play	Low	-0.216*	0.072	**-0.26**	-0.184*	0.073	**-0.23**
(compared to 'very high')	Moderate	-0.047	0.061	**-0.06**	-0.056	0.062	**-0.07**
	High	0.001	0.059	**0.00**	-0.034	0.060	**-0.04**
'Behavioural self-image'	Medium Low	0.383*	0.057	**0.46**	0.284*	0.058	**0.35**
(compared to Low)	Medium High	0.519*	0.059	**0.62**	0.348*	0.061	**0.43**
	High	0.661*	0.062	**0.79**	0.519*	0.064	**0.64**
	Missing data	0.136	0.222	**0.16**	0.093	0.232	**0.11**
'Teachers' support for	Medium Low	0.099	0.055	**0.12**	0.078	0.056	**0.10**
pupils' learning')	Medium High	0.136*	0.056	**0.16**	0.104	0.056	**0.13**
(compared to Low)	High	0.206*	0.066	**0.25**	0.185*	0.067	**0.23**
	Missing data	0.544*	0.209	**0.65**	0.443*	0.213	**0.55**
'Pro-social' behaviour in Year 1					0.270*	0.020	**0.33**
Random Effects	**School variance**	0.119	0.022		0.121	0.022	
	Residual variance	0.705	0.024		0.656	0.024	
-2LL		-3200.47			-2806.42		

* p< 0.05

Table A.5.8: Results for contextualised and value added models for 'Pro-social' behaviour in Year 5 without self-perception factors (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M2a – Final contextualised model when only pupils' views of primary school factors are taken into account.
M2b – Final value added model (i.e., including prior developmental level) when only pupils' views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	-0.007	0.024
School Variance	0.122	0.023
Residual Variance	0.879	0.029
-2LL	-3530.26	

'Pro-social' behaviour		**M2a**			**M2b**		
		Estimate	**SE**	**Effect size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	-0.854*	0.113		-0.625*	0.115	
Age		0.011	0.005	**0.01**	0.005	0.005	**0.01**
Gender (compared to boys)		0.523*	0.039	**0.61**	0.419*	0.041	**0.51**
Behavioural Problems	1 Behavioural Problem	-0.184*	0.064	**-0.21**	-0.141*	0.066	**-0.17**
(compared to none)	2+ Behavioural Problems	-0.176	0.128	**-0.20**	-0.218	0.134	**-0.26**
FSM (compared to none)	Missing data	0.241	0.275	**0.28**	0.048	0.329	**0.06**
	Eligible for FSM	-0.142*	0.056	**-0.17**	-0.123*	0.058	**-0.15**
Mother's qualifications	Missing data	0.069	0.158	**0.08**	0.203	0.159	**0.25**
(compared to none)	Vocational	0.008	0.067	**0.01**	0.038	0.069	**0.05**
	Academic age 16	0.185*	0.056	**0.22**	0.171*	0.057	**0.21**
	Academic age 18	0.141	0.082	**0.16**	0.089	0.083	**0.11**
	Degree or Higher Degree	0.205*	0.074	**0.24**	0.127	0.076	**0.15**
	Other professional / Miscellaneous	0.015	0.204	**0.02**	-0.057	0.230	**-0.07**
Family Salary	Missing data	0.336*	0.109	**0.39**	0.213	0.112	**0.26**
(compared to 'no salary')	£2,500 – 17,499	-0.007	0.065	**-0.01**	-0.079	0.066	**-0.10**
	£17,500 – 29,499	0.199*	0.069	**0.23**	0.123	0.070	**0.15**
	£30,000 – 37,499	0.168*	0.079	**0.20**	0.067	0.080	**0.08**
	£37,500 – 67,499	0.133	0.072	**0.15**	0.077	0.073	**0.09**
	£67,500 – 132,00+	0.126	0.098	**0.15**	0.038	0.101	**0.05**
KS1 HLE: Home computing	Missing data	-0.265*	0.124	**-0.31**	-0.207	0.128	**-0.25**
(compared to Very high)	Low	0.188*	0.072	**0.22**	0.173*	0.072	**0.21**
	Moderate	0.146*	0.066	**0.17**	0.116	0.067	**0.14**
	High	0.097	0.062	**0.11**	0.090	0.063	**0.11**
KS1 HLE: Expressive Play	Low	-0.195*	0.073	**-0.23**	-0.164*	0.074	**-0.20**
(compared to 'very high')	Moderate	-0.028	0.063	**-0.03**	-0.041	0.063	**-0.05**
	High	0.016	0.060	**0.02**	-0.023	0.061	**-0.03**
'Teachers' support for	Medium Low	0.084	0.058	**0.10**	0.077	0.058	**0.09**
pupils' learning')	Medium High	0.142*	0.060	**0.17**	0.125*	0.061	**0.15**
(compared to Low)	High	0.235*	0.072	**0.27**	0.233*	0.074	**0.28**
	Missing data	0.601*	0.182	**0.70**	0.483*	0.178	**0.59**
'Headteacher qualities'	Medium	0.113*	0.057	**0.13**	0.052	0.057	**0.06**
(compared to Low)	High	0.120*	0.059	**0.14**	0.047	0.060	**0.06**
'Positive Social Environment'	Medium Low	0.186*	0.058	**0.22**	0.183*	0.058	**0.22**
(compared to Low)	Medium High	0.132*	0.062	**0.15**	0.073	0.062	**0.09**
	High	0.202*	0.073	**0.23**	0.157*	0.074	**0.19**
'Pro-social' behaviour in Year 1					0.293*	0.020	**0.36**
Random Effects	**School variance**	0.119	0.022		0.116	0.022	
	Residual variance	0.739	0.025		0.678	0.025	
-2LL		-3253.53			-2836.33		

* p< 0.05

Table A.5.9: Results for final contextualised and value added models for 'Hyperactivity' in Year 5 (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M1a – Final contextualised model when both pupils' self-perception factors and views of primary school factors are taken into account.
M1b – Final value added model (i.e., including prior attainment) when both pupils' self-perception factors and views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	0.011	0.023
School Variance	0.072	0.020
Residual Variance	0.931	0.030
-2LL	-3552.35	

'Hyperactivity'		**M1a**			**M1b**		
		Estimate	**SE**	**Effect Size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	1.253*	0.123		0.895*	0.118	
Age		-0.008	0.005	**-0.01**	-0.005	0.004	**-0.01**
Gender (compared to boys)		-0.423*	0.037	**-0.53**	-0.296*	0.035	**-0.41**
Ethnic groups	White European Heritage	-0.072	0.100	**-0.09**	-0.059	0.094	**-0.08**
(compared to White UK)	Black Caribbean Heritage	0.151	0.097	**0.19**	0.065	0.095	**0.09**
	Black African Heritage	0.134	0.126	**0.17**	-0.018	0.123	**-0.03**
	Any other Ethnic Minority Heritage	0.010	0.118	**0.01**	0.057	0.127	**0.08**
	Indian Heritage	-0.290*	0.129	**-0.36**	-0.229	0.122	**-0.32**
	Pakistani Heritage	-0.169	0.098	**-0.21**	-0.196*	0.093	**-0.27**
	Bangladeshi Heritage	-0.589*	0.173	**-0.73**	-0.434*	0.170	**-0.61**
	Mixed Heritage	0.145	0.077	**0.18**	0.071	0.074	**0.10**
Number of siblings	1-2 siblings	-0.088*	0.046	**-0.11**	-0.015	0.043	**-0.02**
(compared to no siblings)	3 + siblings	-0.098	0.062	**-0.12**	0.026	0.058	**0.04**
Need of EAL support	Missing data	0.132*	0.061	**0.16**	0.114*	0.057	**0.16**
(compared to none)	EAL support needed	0.142	0.101	**0.18**	0.070	0.098	**0.10**
Health Problems	1 Health Problem	-0.024	0.040	**-0.03**	-0.015	0.037	**-0.02**
(compared to none)	2 Health Problems	-0.043	0.067	**-0.05**	-0.007	0.063	**-0.01**
	3+ Health Problems	0.328*	0.149	**0.41**	0.064	0.145	**0.09**
Behavioural Problems	1 Behavioural Problem	0.283*	0.059	**0.35**	0.136*	0.056	**0.19**
(compared to none)	2+ Behavioural Problems	0.340*	0.119	**0.42**	0.234*	0.114	**0.33**
FSM (compared to none)	Missing data	-0.142	0.260	**-0.18**	-0.040	0.275	**-0.06**
	Eligible for FSM	0.149*	0.052	**0.19**	0.093	0.050	**0.13**
Mother's qualifications	Missing data	-0.085	0.153	**-0.11**	-0.212	0.142	**-0.30**
(compared to none)	Vocational	0.067	0.063	**0.08**	0.001	0.060	**0.00**
	Academic age 16	-0.114*	0.052	**-0.14**	-0.091	0.049	**-0.13**
	Academic age 18	-0.147*	0.076	**-0.18**	-0.123	0.071	**-0.17**
	Degree or Higher Degree	-0.300*	0.069	**-0.37**	-0.243*	0.066	**-0.34**
	Other professional / Miscellaneous	-0.252	0.188	**-0.31**	-0.123	0.197	**-0.17**
Marital status	Single never married	0.098	0.061	**0.12**	0.097	0.059	**0.14**
(compared to Married)	Living with partner	0.036	0.051	**0.04**	-0.004	0.049	**-0.01**
	Separated / Divorced	0.166*	0.060	**0.21**	0.119*	0.056	**0.17**
	Widow	-0.300	0.342	**-0.37**	-0.064	0.305	**-0.09**
	Other	-0.221	0.216	**-0.27**	-0.266	0.207	**-0.37**
Maternal employment	Missing data	1.331	0.887	**1.65**			**0.00**
(compared to working)	Not employed	-0.067	0.045	**-0.08**	-0.059	0.042	**-0.08**
Family Salary	Missing data	-0.199	0.102	**-0.25**	-0.075	0.097	**-0.10**
(compared to 'no salary')	£2,500 – 17,499	-0.095	0.064	**-0.12**	-0.029	0.060	**-0.04**
	£17,500 – 29,499	-0.227*	0.071	**-0.28**	-0.161*	0.067	**-0.23**
	£30,000 – 37,499	-0.199*	0.080	**-0.25**	-0.132	0.076	**-0.18**
	£37,500 – 67,499	-0.073	0.075	**-0.09**	-0.032	0.070	**-0.04**
	£67,500 – 132,00+	0.024	0.099	**0.03**	0.064	0.094	**0.09**
KS1 HLE: Enrichment outing	Missing data	0.163	0.118	**0.20**	0.087	0.112	**0.12**
(compared to 'very high')	Low	-0.171*	0.078	**-0.21**	-0.094	0.073	**-0.13**
	Moderate	-0.089	0.066	**-0.11**	-0.121*	0.062	**-0.17**
	High	-0.120*	0.062	**-0.15**	-0.115*	0.058	**-0.16**

KS1 HLE: Expressive Play	Low	0.193*	0.067	**0.24**	0.198*	0.063	**0.28**
(compared to 'very high')	Moderate	0.006	0.057	**0.01**	0.016	0.053	**0.02**
	High	-0.022	0.055	**-0.03**	0.020	0.052	**0.03**
'Behavioural self-image'	Medium Low	-0.482*	0.053	**-0.60**	-0.382*	0.050	**-0.53**
(compared to Low)	Medium High	-0.787*	0.056	**-0.98**	-0.586*	0.053	**-0.82**
	High	-1.007*	0.059	**-1.25**	-0.735*	0.057	**-1.03**
	Missing data	-0.288	0.207	**-0.36**	-0.065	0.199	**-0.09**
'Positive Social Environment'	Medium Low	-0.238*	0.052	**-0.30**	-0.184*	0.049	**-0.26**
(compared to Low)	Medium High	-0.204*	0.055	**-0.25**	-0.130*	0.051	**-0.18**
	High	-0.156*	0.064	**-0.19**	-0.135*	0.060	**-0.19**
	Missing data	-0.182	0.194	**-0.23**	-0.079	0.182	**-0.11**
'Hyperactivity' in Year 1					0.413*	0.018	**0.58**
Random Effects	**School variance**	0.039	0.013		0.034	0.011	
	Residual variance	0.647	0.021		0.511	0.018	
-2LL		-3021.48			-2473.39		

* p< 0.05

A.5.10: Results for contextualised and value added models for 'Hyperactivity' in Year 5 without self-perception factors (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M2a – Final contextualised model when only pupils' views of primary school factors are taken into account.
M2b – Final value added model (i.e., including prior developmental level) when only pupils' views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	0.011	0.023
School Variance	0.072	0.020
Residual Variance	0.931	0.030
-2LL	-3552.35	

'Hyperactivity'		**M2a**			**M2b**		
		Estimate	**SE**	**Effect Size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	0.926*	0.129		0.626*	0.120	
Age		-0.008	0.005	**-0.01**	-0.005	0.005	**-0.01**
Gender (compared to boys)		-0.572*	0.038	**-0.67**	-0.386*	0.036	**-0.52**
Ethnic groups	White European Heritage	-0.068	0.107	**-0.08**	-0.057	0.098	**-0.08**
(compared to White UK)	Black Caribbean Heritage	0.166	0.103	**0.19**	0.078	0.099	**0.10**
	Black African Heritage	0.152	0.134	**0.18**	-0.030	0.128	**-0.04**
	Any other Ethnic Minority Heritage	-0.004	0.126	**0.00**	0.043	0.133	**0.06**
	Indian Heritage	-0.328*	0.138	**-0.38**	-0.224	0.128	**-0.30**
	Pakistani Heritage	-0.262*	0.105	**-0.31**	-0.258*	0.097	**-0.35**
	Bangladeshi Heritage	-0.695*	0.185	**-0.81**	-0.510*	0.177	**-0.68**
	Mixed Heritage	0.139	0.083	**0.16**	0.063	0.078	**0.08**
Number of siblings	1-2 siblings	-0.091	0.049	**-0.11**	-0.011	0.045	**-0.01**
(compared to no siblings)	3 + siblings	-0.084	0.066	**-0.10**	0.046	0.060	**0.06**
Need of EAL support	Missing data	0.141*	0.065	**0.16**	0.118*	0.060	**0.16**
(compared to none)	EAL support needed	0.183	0.107	**0.21**	0.081	0.102	**0.11**
Health Problems	1 Health Problem	-0.019	0.042	**-0.02**	-0.012	0.039	**-0.02**
(compared to none)	2 Health Problems	-0.064	0.072	**-0.07**	-0.024	0.066	**-0.03**
	3+ Health Problems	0.445*	0.159	**0.52**	0.122	0.151	**0.16**
Behavioural Problems	1 Behavioural Problem	0.316*	0.063	**0.37**	0.142*	0.058	**0.19**
(compared to none)	2+ Behavioural Problems	0.402*	0.126	**0.47**	0.259*	0.119	**0.35**
FSM (compared to none)	Missing data	-0.170	0.277	**-0.20**	-0.036	0.286	**-0.05**
	Eligible for FSM	0.171*	0.056	**0.20**	0.103*	0.052	**0.14**
Mother's qualifications	Missing data	-0.078	0.163	**-0.09**	-0.218	0.148	**-0.29**
(compared to none)	Vocational	0.052	0.067	**0.06**	-0.021	0.062	**-0.03**
	Academic age 16	-0.158*	0.055	**-0.18**	-0.121*	0.051	**-0.16**
	Academic age 18	-0.194*	0.081	**-0.23**	-0.161*	0.074	**-0.22**
	Degree or Higher Degree	-0.345*	0.073	**-0.40**	-0.268*	0.069	**-0.36**
	Other professional / Miscellaneous	-0.299	0.200	**-0.35**	-0.179	0.205	**-0.24**
Marital status	Single never married	0.181*	0.065	**0.21**	0.149*	0.061	**0.20**
(compared to Married)	Living with partner	0.061	0.055	**0.07**	0.017	0.051	**0.02**
	Separated / Divorced	0.200*	0.064	**0.23**	0.134*	0.059	**0.18**
	Widow	-0.348	0.365	**-0.41**	-0.074	0.319	**-0.10**
	Other	-0.189	0.230	**-0.22**	-0.260	0.216	**-0.35**
Maternal employment	Missing data	1.956*	0.945	**2.28**			**0.00**
(compared to working)	Not employed	-0.122*	0.047	**-0.14**	-0.102*	0.044	**-0.14**
Family Salary	Missing data	-0.270*	0.109	**-0.31**	-0.109	0.102	**-0.15**
(compared to 'no salary')	£2,500 – 17,499	-0.090	0.068	**-0.10**	-0.021	0.063	**-0.03**
	£17,500 – 29,499	-0.258*	0.076	**-0.30**	-0.174*	0.070	**-0.23**
	£30,000 – 37,499	-0.249*	0.086	**-0.29**	-0.171*	0.079	**-0.23**
	£37,500 – 67,499	-0.091	0.079	**-0.11**	-0.053	0.073	**-0.07**
	£67,500 – 132,00+	0.022	0.106	**0.03**	0.056	0.098	**0.07**
KS1 HLE: Enrichment outing	Missing data	0.189	0.125	**0.22**	0.088	0.117	**0.12**
(compared to 'very high')	Low	-0.221*	0.083	**-0.26**	-0.130	0.076	**-0.17**
	Moderate	-0.095	0.071	**-0.11**	-0.126*	0.065	**-0.17**
	High	-0.133*	0.066	**-0.16**	-0.125*	0.061	**-0.17**

KS1 HLE: Expressive Play	Low	0.184*	0.072	**0.21**	0.189*	0.066	**0.25**
(compared to 'very high')	Moderate	-0.014	0.061	**-0.02**	-0.001	0.056	**0.00**
	High	-0.034	0.059	**-0.04**	0.011	0.054	**0.01**
'Positive Social Environment'	Medium Low	-0.341*	0.055	**-0.40**	-0.250*	0.051	**-0.33**
(compared to Low)	Medium High	-0.384*	0.057	**-0.45**	-0.243*	0.053	**-0.33**
	High	-0.411*	0.066	**-0.48**	-0.301*	0.061	**-0.40**
	Missing data	-0.102	0.175	**-0.12**	0.073	0.156	**0.10**
'Hyperactivity' in Year 1					0.465*	0.018	**0.62**
Random Effects	**School variance**	0.047	0.015		0.036	0.012	
	Residual variance	0.735	0.024		0.558	0.020	
-2LL		-3167.82			-2558.03		

* p< 0.05

Table A.5.11: Results for final contextualised and value added models for 'Anti-social' behaviour in Year 5 (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M1a – Final contextualised model when both pupils' self-perception factors and views of primary school factors are taken into account.
M1b – Final value added model (i.e., including prior attainment) when both pupils' self-perception factors and views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	0.009	0.022
School Variance	0.049	0.020
Residual Variance	0.952	0.031
-2LL	-3556.83	

'Anti-social' behaviour		**M1a**			**M1b**		
		Estimate	**SE**	**Effect size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	0.556*	0.109		0.391*	0.111	
Age		0.008	0.005	**0.01**	0.005	0.005	**0.01**
Gender (compared to boys)		-0.223*	0.042	**-0.24**	-0.223*	0.043	**-0.25**
Ethnic groups	White European Heritage	-0.130	0.112	**-0.14**	-0.110	0.115	**-0.12**
(compared to White UK)	Black Caribbean Heritage	-0.001	0.107	**0.00**	-0.089	0.114	**-0.10**
	Black African Heritage	0.361*	0.141	**0.39**	0.031	0.148	**0.03**
	Any other Ethnic Minority Heritage	-0.001	0.133	**0.00**	0.120	0.156	**0.13**
	Indian Heritage	-0.236	0.145	**-0.26**	-0.260	0.148	**-0.29**
	Pakistani Heritage	-0.061	0.106	**-0.07**	-0.140	0.105	**-0.16**
	Bangladeshi Heritage	-0.081	0.191	**-0.09**	-0.236	0.200	**-0.26**
	Mixed Heritage	-0.048	0.086	**-0.05**	-0.095	0.090	**-0.11**
Behavioural Problems	1 Behavioural Problem	0.144*	0.067	**0.16**	0.078	0.069	**0.09**
(compared to none)	2+ Behavioural Problems	0.146	0.134	**0.16**	0.118	0.141	**0.13**
FSM (compared to none)	Missing data	-0.425	0.278	**-0.46**	-0.446	0.332	**-0.50**
	Eligible for FSM	0.209*	0.054	**0.23**	0.198*	0.056	**0.22**
Mother's qualifications	Missing data	0.157	0.167	**0.17**	-0.057	0.171	**-0.06**
(compared to none)	Vocational	0.025	0.070	**0.03**	0.077	0.072	**0.09**
	Academic age 16	-0.125*	0.058	**-0.14**	-0.087	0.059	**-0.10**
	Academic age 18	-0.118	0.084	**-0.13**	-0.037	0.086	**-0.04**
	Degree or Higher Degree	-0.188*	0.071	**-0.20**	-0.143*	0.072	**-0.16**
	Other professional / Miscellaneous	-0.170	0.212	**-0.19**	-0.014	0.242	**-0.02**
Absent father		0.124*	0.048	**0.14**	0.121*	0.050	**0.14**
KS1 HLE: One-to-one interaction	Missing data	0.140	0.090	**0.15**	0.223*	0.094	**0.25**
(compared to 'very high')	Low	0.178*	0.079	**0.19**	0.188*	0.081	**0.21**
	Moderate	0.079	0.067	**0.09**	0.133*	0.069	**0.15**
	High	0.094	0.063	**0.10**	0.159*	0.065	**0.18**
KS1 HLE: Expressive Play	Low	0.011	0.076	**0.01**	0.026	0.077	**0.03**
(compared to 'very high')	Moderate	-0.154*	0.065	**-0.17**	-0.127*	0.066	**-0.14**
	High	-0.130*	0.063	**-0.14**	-0.080	0.064	**-0.09**
'Behavioural self-image'	Medium Low	-0.307*	0.060	**-0.33**	-0.275*	0.062	**-0.31**
(compared to Low)	Medium High	-0.389*	0.063	**-0.42**	-0.344*	0.065	**-0.38**
	High	-0.476*	0.067	**-0.52**	-0.420*	0.068	**-0.47**
	Missing data	-0.005	0.233	**-0.01**	-0.023	0.242	**-0.03**
'Positive Social Environment'	Medium Low	-0.190*	0.059	**-0.21**	-0.136*	0.060	**-0.15**
(compared to Low)	Medium High	-0.162*	0.062	**-0.18**	-0.118	0.063	**-0.13**
	High	-0.101	0.071	**-0.11**	-0.058	0.073	**-0.06**
	Missing data	-0.140	0.218	**-0.15**	0.000	0.221	**0.00**
'Anti-social' behaviour in Year 1					0.181*	0.022	**0.20**
Random Effects	**School variance**	0.040	0.018		0.025	0.015	
	Residual variance	0.842	0.028		0.800	0.028	
-2LL		-3305.02			-2897.29		

* p< 0.05

Table A.5.12: Results for contextualised and value added models for 'Anti-social' behaviour in Year 5 without self-perception factors (impact of child and family background, home learning environment, self-perceptions and views of primary school)

M2a – Final contextualised model when only pupils' views of primary school factors are taken into account.
M2b – Final value added model (i.e., including prior developmental level) when only pupils' views of primary school factors are taken into account.

	Null Model	
	Estimate	**SE**
Intercept	0.009	0.022
School Variance	0.049	0.020
Residual Variance	0.952	0.031
-2LL	-3556.83	

'Anti-social' behaviour		**M2a**			**M2b**		
		Estimate	**SE**	**Effect size**	**Estimate**	**SE**	**Effect size**
Fixed Effects	Intercept	0.352*	0.105		0.210*	0.107	
Age		0.008	0.005	**0.01**	0.005	0.006	**0.01**
Gender (compared to boys)		-0.291*	0.041	**-0.31**	-0.283*	0.042	**-0.31**
Ethnic groups (compared to White UK)	White European Heritage	-0.130	0.113	**-0.14**	-0.110	0.116	**-0.12**
	Black Caribbean Heritage	0.027	0.108	**0.03**	-0.066	0.115	**-0.07**
	Black African Heritage	0.381*	0.142	**0.41**	0.032	0.150	**0.04**
	Any other Ethnic Minority Heritage	-0.003	0.135	**0.00**	0.120	0.157	**0.13**
	Indian Heritage	-0.258	0.147	**-0.28**	-0.271	0.149	**-0.30**
	Pakistani Heritage	-0.111	0.107	**-0.12**	-0.193	0.107	**-0.21**
	Bangladeshi Heritage	-0.126	0.193	**-0.14**	-0.287	0.202	**-0.32**
	Mixed Heritage	-0.044	0.087	**-0.05**	-0.094	0.091	**-0.10**
Behavioural Problems (compared to none)	1 Behavioural Problem	0.161*	0.067	**0.17**	0.091	0.069	**0.10**
	2+ Behavioural Problems	0.185	0.135	**0.20**	0.146	0.142	**0.16**
FSM (compared to none)	Missing data	-0.397	0.281	**-0.43**	-0.433	0.335	**-0.48**
	Eligible for FSM	0.219*	0.054	**0.24**	0.202*	0.056	**0.22**
Mother's qualifications (compared to none)	Missing data	0.173	0.168	**0.19**	-0.058	0.172	**-0.06**
	Vocational	0.016	0.071	**0.02**	0.066	0.073	**0.07**
	Academic age 16	-0.145*	0.058	**-0.16**	-0.104	0.060	**-0.12**
	Academic age 18	-0.148	0.085	**-0.16**	-0.062	0.087	**-0.07**
	Degree or Higher Degree	-0.211*	0.071	**-0.23**	-0.161*	0.073	**-0.18**
	Other professional / Miscellaneous	-0.199	0.214	**-0.21**	-0.059	0.244	**-0.07**
Absent father		0.134*	0.049	**0.14**	0.127*	0.050	**0.14**
KS1 HLE: One-to-one interaction (compared to 'very high')	Missing data	0.133	0.091	**0.14**	0.219*	0.095	**0.24**
	Low	0.186*	0.080	**0.20**	0.196*	0.082	**0.22**
	Moderate	0.080	0.068	**0.09**	0.141*	0.070	**0.16**
	High	0.086	0.064	**0.09**	0.156*	0.065	**0.17**
KS1 HLE: Expressive Play (compared to 'very high')	Low	0.002	0.077	**0.00**	0.019	0.078	**0.02**
	Moderate	-0.159*	0.065	**-0.17**	-0.135*	0.066	**-0.15**
	High	-0.132*	0.063	**-0.14**	-0.084	0.064	**-0.09**
'Positive Social Environment' (compared to Low)	Medium Low	-0.244*	0.059	**-0.26**	-0.183*	0.060	**-0.20**
	Medium High	-0.247*	0.061	**-0.27**	-0.192*	0.062	**-0.21**
	High	-0.219*	0.070	**-0.24**	-0.160*	0.072	**-0.18**
	Missing data	-0.027	0.185	**-0.03**	0.089	0.182	**0.10**
'Anti-social' behaviour in Year 1					0.198*	0.022	**0.22**
Random Effects	**School variance**	0.043	0.018		0.027	0.015	
	Residual variance	0.859	0.029		0.812	0.028	
-2LL		-3326.18			-2911.51		

* p< 0.05

Appendix 6: The predictive impact of pupils' self-perceptions measured at Year 2 on children's outcomes in Year 5: Effect sizes from contextualised models

Table A.6.1: The impact of Year 2 pupils' self-perceptions on Reading in Year 5 (results from contextualised models)

Reading		**Effect Size#**	**Description**
Separate in the model	'Enjoyment of school'	0.16 / 0.13 / 0.03	Children with medium levels of 'Enjoyment of school' in Year 2 had higher Reading scores in Year 5.
	'Behavioural self-image'	0.24 / 0.21 / 0.20	Children with medium and high levels of 'Behavioural self-image' in Year 2 had higher Reading scores in Year 5.

#*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Table A.6.2: The impact of Year 2 pupils' self-perceptions on Mathematics in Year 5 (results from contextualised models)

Mathematics		**Effect size#**	**Description**
Separate in the model	'Enjoyment of school'	0.17 / 0.12 / 0.08	Children with medium and high levels of 'Enjoyment of school' in Year 2 had higher Mathematics scores in Year 5.
	'Academic self-image'	0.17 / 0.17 / 0.09	Children with medium and high levels of 'Academic self-image' in Year 2 had higher Mathematics scores in Year 5.
	'Behavioural self-image'	0.19 / 0.16 / 0.21	Children with medium and high levels of 'Behavioural self-image' in Year 2 had higher Mathematics scores in Year 5.

#*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Table A.6.3: The impact of Year 2 pupils' self-perceptions on 'Self-regulation' in Year 5 (results from contextualised models)

'Self-regulation'		**Effect size#**	**Description**
Separate in the model	'Enjoyment of school'	0.20 / 0.17 / 0.07	Children with medium levels of 'Enjoyment of school' in Year 2 had higher 'Self-regulation' in Year 5.
	'Academic self-image'	0.20 / 0.15 / 0.12	Children with medium and high levels of 'Academic self-image' in Year 2 had higher 'Self-regulation' in Year 5.
	'Behavioural self-image'	0.24 / 0.26 / 0.29	Children with higher levels of 'Behavioural self-image' in Year 2 had higher 'Self-regulation' in Year 5.
Together in the model	'Enjoyment of school'	0.16 / 0.12 / -0.01	Children with medium levels of 'Enjoyment of school' in Year 2 had higher 'Self-regulation' in Year 5.
	'Behavioural self-image'	0.23 / 0.25 / 0.30	Children with higher levels of 'Behavioural self-image' in Year 2 had higher 'Self-regulation' in Year 5.

#*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Table A.6.4: The impact of Year 2 pupils' self-perceptions on 'Pro-social' behaviour in Year 5 (results from contextualised models)

'Pro-social' behaviour		Effect size[#]	Description
Separate in the model	'Enjoyment of school'	0.13 / 0.22 / 0.28	Children with higher levels of 'Enjoyment of school' in Year 2 had higher 'Pro-social' behaviour in Year 5.
	'Academic self-image'	0.17 / 0.20 / 0.20	Children with medium and high levels of 'Academic self-image' in Year 2 had higher 'Pro-social' behaviour in Year 5.
	'Behavioural self-image'	0.27 / 0.52 / 0.55	Children with higher levels of 'Behavioural self-image' in Year 2 had higher 'Pro-social' behaviour in Year 5.

[#]*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Table A.6.5: The impact of Year 2 pupils' self-perceptions on 'Hyperactivity' in Year 5 (results from contextualised models)

'Hyperactivity'		Effect size[#]	Description
Separate in the model	'Enjoyment of school'	-0.19 / -0.17 / -0.06	Children with medium levels of 'Enjoyment of school' in Year 2 had lower 'Hyperactivity' in Year 5.
	'Academic self-image'	-0.33 / -0.36 / -0.37	Children with medium and high levels of 'Academic self-image' in Year 2 had lower 'Hyperactivity' in Year 5.
	'Behavioural self-image'	-0.47 / -0.61 / -0.77	Children with higher levels of 'Behavioural self-image' in Year 2 had lower 'Hyperactivity' in Year 5.
Together in the model	'Academic self-image'	-0.20 / -0.15 / -0.09	Children with medium levels of 'Academic self-image' in Year 2 had lower 'Hyperactivity' in Year 5.
	'Behavioural self-image'	-0.44 / -0.58 / -0.74	Children with higher levels of 'Behavioural self-image' in Year 2 had lower 'Hyperactivity' in Year 5.

[#]*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*

Table A.6.6: The impact of Year 2 pupils' self-perceptions on 'Anti-social' behaviour in Year 5 (results from contextualised models)

'Anti-social' behaviour		Effect size[#]	Description
Separate in the model	'Behavioural self-image'	-0.29 / -0.42 / -0.45	Children with higher levels of 'Behavioural self-image' in Year 2 had lower 'Anti-social' behaviour in Year 5.

[#]*Note: Effect sizes are presented for Medium Low, Medium High and High group in comparison to Low group.*